

Science Paper 1 Revision Pack

Here are some Paper 1 Biology, Chemistry and Physics revision questions to help you prepare for your mock exams.

It is better to do some Science revision every week than leave it all to the last moment.

Check your answers on the year group Science Team so you know how you did and ask your teachers about anything you are unsure about.

Intervention – AQA Trilogy Biology paper 1 – Foundation

B1 Cell structure and transport

What are two types of eukaryotic cell?	What type of cell are bacteria?	Where is DNA found in animal and plant cells?	What is the function of the cell membrane?	What is the function of mitochondria?
What is the function of chloroplasts?	What is the function of ribosomes?	What is the function of the cell wall?	What is the structure of the main genetic material in a prokaryotic cell?	How are electron microscopes different to light microscopes?
What is the function of a red blood cell?	Give three adaptations of a red blood cell.	What is the function of a nerve cell?	Give two adaptations of a nerve cell.	What is the function of a sperm cell?
Give two adaptations of a sperm cell.	What is the function of a palisade cell?	Give two adaptations of a palisade cell.	What is the function of a root hair cell?	Give two adaptations of a root hair cell.

Intervention – AQA Trilogy Biology paper 1 – Foundation

B1 Cell structure and transport

What is diffusion?	Name three factors that affect the rate of diffusion.	How are villi adapted for exchanging substances?	What is the purpose of active transport in the small intestine?
What is osmosis?	Give one example of osmosis in a plant.	What is active transport?	Why is active transport needed in plant roots?
	How are the lungs adapted for efficient gas exchange?	How are fish gills adapted for efficient gas exchange?	

Intervention – AQA Trilogy Biology paper 1 – Foundation

B1 Cell division

What is a stem cell?	What are adult stem cells?	Where are adult stem cells found?	What are embryonic stem cells?	Where are embryonic stem cells found?
What is therapeutic cloning?	Give one advantage of using therapeutic cloning.	Give one advantage of using adult stem cells.	Give two disadvantages of using adult stem cells.	Give two advantages of using embryonic stem cells.
Give two disadvantages of using embryonic stem cells.	What are plant meristems?	Give two advantages of using plant meristems to clone plants.	Give one disadvantage of using plant meristems to clone plants.	What is cell division by mitosis?
What is the purpose of mitosis?	What happens during the first stage of the cell cycle?	What happens during mitosis?	What happens during the third stage of the cell cycle?	

Intervention – AQA Trilogy Biology paper 1 – Foundation

B2 Organisation and the digestive system

Name the five levels of organisation.	What is a tissue?	What is an organ?	What is the function of the liver in digestion?	What is the function of saliva in digestion?
Name three enzymes produced in the pancreas.	What are enzymes?	Why are enzymes described as specific?	Describe the function of amylase.	Where is amylase produced?
Describe the function of proteases.	Where are proteases produced?	Describe the function of lipases.	Where are lipases produced?	What are two factors that affect the rate of activity of an enzyme?
What does denatured mean?	Describe the effect of temperature on enzyme activity.	Describe the effect of pH on enzyme activity.	Why do different digestive enzymes have different optimum pHs?	

Intervention – AQA Trilogy Biology paper 1 – Foundation

B2 Organising animals and plants

Name the four main components of blood.	What is the function of platelets?	Describe three adaptations of a red blood cell.	How do white blood cells protect the body?	Name the substances transported in the blood plasma.	What is coronary heart disease?
Why is the human circulatory system a double circulatory system?	How does the structure of an artery relate to its function?	How does the structure of a vein relate to its function?	How does the structure of a capillary relate to its function?	List the structures air passes through when breathing in.	What is a stent?
What are statins?	What is a faulty heart valve?	How can a faulty heart valve be treated?	When do heart transplants take place?	What are artificial hearts used for?	

Intervention – AQA Trilogy Biology paper 1 – Foundation

B2 Organising animals and plants

Why is a leaf an organ?	What is the function of the xylem?	Name four factors that affect the rate of transpiration.	What is the purpose of transpiration?	What effect does temperature have on the rate of transpiration?	What effect does humidity have on the rate of transpiration?
How is the upper epidermis adapted for its function?	How is the palisade mesophyll adapted for its function?	How is the spongy mesophyll adapted for its function?	What is the function of the guard cells?	Why does increased light intensity increase the rate of transpiration?	What is the function of the stomata?
Give three adaptations of the xylem.	What is the function of the phloem?	What is the purpose of translocation?	Define the term transpiration.	Where are most stomata found?	What is the advantage to the plant of having a high number of stomata at this location?

Intervention – AQA Trilogy Biology paper 1 – Foundation

B3 Communicable diseases

What is a communicable disease?	What is a pathogen?	Name four types of pathogen.	How can pathogens spread?	What non-specific systems does the body use to prevent pathogens getting into it?
How do bacteria make you ill?	How do viruses make you ill?	Name three examples of viral diseases.	Name two examples of bacterial diseases.	What three functions do white blood cells have?
Name four methods of controlling the spread of communicable disease.	What happens during phagocytosis?	Name one fungal disease.	Describe an example of a protist disease.	

Intervention – AQA Trilogy Biology paper 1 – Foundation

B3 Preventing and treating disease

What are antigens?	Why are antibodies a specific defence?	What is the function of an antitoxin?	What does a vaccine contain?
What is an antibiotic?	What properties of new drugs are clinical trials designed to test?	What is a placebo?	How does vaccination protect against a specific pathogen?
What do painkillers do?	What happens in the pre-clinical stage of a drug trial?	What is a double-blind trial?	What is herd immunity?

Intervention – AQA Trilogy Biology paper 1 – Foundation

B2 Non-communicable diseases

What is coronary heart disease?	When do heart transplants take place?	What is a risk factor?
What is a stent?	What are artificial hearts used for?	Give five risk factors.
What are statins?	Define health.	What is cancer?
What is a faulty heart valve?	What factors can affect health?	What are malignant tumours?
How can a faulty heart valve be treated?	What two types of risk factor affect the development of cancers?	What are benign tumours?

Intervention – AQA Trilogy Biology paper 1 – Foundation

B4 Photosynthesis

Where does photosynthesis occur?	Give the balanced symbol equation for photosynthesis.	Describe how temperature affects the rate of photosynthesis.
What is the name of the green pigment in the leaves?	Define the term limiting factor.	
What type of reaction is photosynthesis?	Give the limiting factors of photosynthesis.	Why are limiting factors important in the economics of growing plants in greenhouses?
What type of energy is used in photosynthesis?	Describe how light intensity affects the rate of photosynthesis.	How do plants use the glucose produced in photosynthesis?
Give the word equation for photosynthesis.	Describe how carbon dioxide concentration affects the rate of photosynthesis.	

Intervention – AQA Trilogy Biology paper 1 – Foundation

B4 Respiration

Define the term cellular respiration.	Write the balanced symbol equation for aerobic respiration.	What substance builds up in the muscles during anaerobic respiration?
What do organisms need energy for?	Why does aerobic respiration release more energy than anaerobic respiration?	What happens to muscles during long periods of activity?
What is the difference between aerobic and anaerobic respiration?	What is anaerobic respiration in yeast cells called?	
Write the word equation for aerobic respiration.	Write the word equation for anaerobic respiration in plant and yeast cells.	
Write the word equation for anaerobic respiration in muscles.	How does the body supply the muscles with more oxygenated blood during exercise?	What is metabolism?

Intervention – AQA Trilogy Chemistry paper 1 – Foundation

C1a Atomic structure

What is an atom?	What is Dalton's model of the atom?	What is the plum pudding model of the atom?	What did scientists discover in the alpha scattering experiment?	Describe the nuclear model of the atom.
What did Niels Bohr discover?	What did James Chadwick discover?	Where are protons and neutrons?	What is the relative mass of each sub-atomic particle?	What is the relative charge of each sub-atomic particle?
How can you find out the number of protons in an atom?	How can you calculate the number of neutrons in an atom?	Why do atoms have no overall charge?	How many electrons would you place in the first, second, and third shells?	What is an element?
What is a compound?	What is a mixture?	What are isotopes?	What are the four physical processes that can be used to separate mixtures?	What is relative mass?

Intervention – AQA Trilogy Chemistry paper 1 – Foundation

C1b The periodic table

How is the modern Periodic Table ordered?	How were the early lists of elements ordered?	Why did Mendeleev swap the order of some elements?	Why did Mendeleev leave gaps in his Periodic Table?	Why do elements in a group have similar chemical properties?
Where are metals and non-metals located on the Periodic Table?	What name is given to the Group 1 elements?	Why are the alkali metals named this?	Give the general equations for the reactions of alkali metals with oxygen, chlorine, and water.	How does the reactivity of the alkali metals change down the group?
Why does the reactivity of the alkali metals increase down the group?	What name is given to the Group 7 elements?	Give the formulae of the first four halogens.	How do the melting points of the halogens change down the group?	How does the reactivity of the halogens change down the group?
Why does the reactivity of the halogens decrease down the group?	What is a displacement reaction?	What name is given to the Group 0 elements?	Why are the noble gases inert?	How do the melting points of the noble gases change down the group?

Intervention – AQA Trilogy Chemistry paper 1 – Foundation

C2 Structure and bonding

How are covalent bonds formed?	Which type of atoms form covalent bonds between them?	Describe the structure and bonding of a giant covalent substance.	Describe the structure and bonding of small molecules.	Describe the structure and bonding of polymers.	Why do giant covalent substances have high melting points?
Why do small molecules have low melting points?	Why do large molecules have higher melting and boiling points than small molecules?	Why do most covalent substances not conduct electricity?	Describe the structure and bonding in graphite.	Why can graphite conduct electricity?	Explain why graphite is soft.
What is graphene?	Give two properties of graphene.	What is a fullerene?	What is a nanotube?	Give two properties of nanotubes.	Give three uses of fullerenes.
What is an ion?	Which kinds of elements form ionic bonds?	What charges do ions from Groups 1 and 2 form?	What charges do ions from Groups 6 and 7 form?	Name the force that holds oppositely charged ions together.	Describe the structure of a giant ionic lattice.
Why do ionic substances have high melting points?	Why don't ionic substances conduct electricity when solid?	When can ionic substances conduct electricity?	Why do ionic substances conduct electricity when melted or dissolved?	Describe the structure of a pure metal.	Describe the bonding in a pure metal.
What are four properties of pure metals?	Explain why pure metals are malleable.	Explain why metals have high melting and boiling points.	Why are metals good conductors of electricity and of thermal energy?	What is an alloy?	Explain why alloys are harder than pure metals.

What is the conservation of mass?	When a metal forms a metal oxide, why does the mass increase?	When an acid reacts with a metal, why does the mass decrease?	What is relative formula mass?
How can you tell when a symbol equation is balanced?	What is a unit for concentration?	Which formula is used to calculate concentration from mass and volume?	Which formula is used to calculate volume from concentration and mass?
How can you convert a volume reading in cm^3 to dm^3 ?	If the amount of solute in a solution is increased, what happens to its concentration?	If the volume of water in a solution is increased, what happens to its concentration?	
What are the four state symbols and what do they stand for?	Which formula is used to calculate mass from concentration in g/dm^3 and volume?		

Intervention – AQA Trilogy Chemistry paper 1 – Foundation

C4 Chemical changes

In terms of pH, what is an acid?	In terms of pH, what is a neutral solution?	How do you measure the pH of a substance?	What is a salt?	Which type of salts do sulfuric acid, hydrochloric acid, and nitric acid form?	What are the products of a reaction between a metal and an acid?	What are the products of a reaction between a metal hydroxide and an acid?
What is a base?	What is an alkali?	What is a neutralisation reaction?	What is the ionic equation for a reaction between an acid and an alkali?	How can you obtain a solid salt from a solution?	What are the products of a reaction between a metal oxide and an acid?	What are the products of a reaction between a metal carbonate and an acid?
What does reactivity mean?	How can metals be ordered by their reactivity?	What name is given to a list of metals ordered by their reactivity?	In terms of electrons, what makes some metals more reactive than others?	Why are gold and silver found naturally as elements in the Earth's crust?	What is an ore?	How are metals less reactive than carbon extracted from their ores?
In terms of oxygen, what is oxidation?	In terms of oxygen, what is reduction?	Why can metals like potassium and aluminium not be extracted by reduction with carbon?	How are metals more reactive than carbon extracted from their ores?	What is a displacement reaction?		

What is electrolysis?	What is the name of the positive electrode?	What is the name of the negative electrode?	What is an electrolyte?
Where are metals formed?	Where are non-metals formed?	How can ionic substances be electrolysed?	Why can't solid ionic substances not be electrolysed?
In the electrolysis of solutions, when is the metal not produced at the cathode?	In the electrolysis of a metal halide solution, what is produced at the anode?	In the electrolysis of a metal sulfate solution, what is produced at the anode?	What is the equation for the ionisation of water?
What metals are extracted from ionic compounds by using electrolysis?	In the electrolysis of aluminium oxide, why is the aluminium oxide mixed with cryolite?	In the electrolysis of aluminium oxide, what are the anodes made of?	In the electrolysis of aluminium oxide, why do the anodes need to be replaced?

What is an exothermic energy transfer?	What is an endothermic energy transfer?	What is a reaction profile?	What is the activation energy?
Give 2 examples of an exothermic reaction	Give 2 examples of an endothermic reaction	Potassium nitrate dissolving in water is an endothermic process. Explain what you would feel if you held it in your hand.	Two solutions are added together and the temperature changes from 19°C to 27°C. Is this an endothermic or exothermic reaction?

Intervention – AQA Trilogy Physics paper 1 – Foundation

P1 Energy - Conservation & dissipation of energy

Name the nine energy stores.	Name the four ways in which energy can be transferred.	What is a system?	What is a closed system?	What is work done?
What is the unit for energy?	What is one joule of work?	Describe the energy transfer when a moving car slows down.	Describe the energy transfer when an electric kettle is used to heat water.	Describe the energy transfer when a ball is fired using an elastic band.
Describe the energy transfer when a battery powered toy car is used.	Describe the energy transfer when a falling apple hits the ground.	Name the unit that represents one joule transferred per second.		

Intervention – AQA Trilogy Physics paper 1 – Foundation

P1 Energy - Energy transfer by heating

What does a material's thermal conductivity tell you?	Which materials have low thermal conductivity?	Give three factors that determine the rate of thermal energy transfer through a material.	What factors affect the rate of heat loss from a building?
Define specific heat capacity.	What is the equation for calculating specific heat capacity?	What factors affect the temperature rise of a substance?	What is the unit for specific heat capacity?
Give three methods of reducing the rate of energy transfer from a house.	What type of material make the best conductors of energy?		

Intervention – AQA Trilogy Physics paper 1 – Foundation

P1 Energy - Energy resources

What is a non-renewable energy resource?	What is a renewable energy resource?	What are the main renewable and non-renewable resources available on Earth?	What are the main advantages of using coal as an energy resource?	What are the main disadvantages of using coal as an energy resource?
What are the main advantages of using nuclear fuel as an energy resource?	What are the main disadvantages of using nuclear fuel as an energy resource?	What are the main advantages of using solar energy?	What are the main disadvantages of using solar energy?	What are the main advantages of using tidal power?
What are the main disadvantages of using tidal power?	What are the main advantages of using wave turbines?	What are the main disadvantages of using wave turbines?	What are the main disadvantages of using wind turbines?	
What are the advantages and the disadvantages of using geothermal energy?	What are the main advantages and disadvantages of using biofuels?	What are the main advantages and disadvantages of using hydroelectric power?		

Intervention – AQA Trilogy Physics paper 1 – Foundation

P2 Electricity - Electric circuits

What is electric current?	What units are charge, current, and time measured in?	What is the same at all points when charge flows in a closed loop?	What must there be in a closed circuit so that electrical charge can flow?	Which two factors does current depend on and what are their units?
What happens to the current if the resistance is increased but the p.d. stays the same?	What is an ohmic conductor?	What happens to the resistance of a filament lamp as its temperature increases?	What happens to the resistance of a thermistor as temperature increases?	
What happens to the resistance of a light-dependent resistor when light intensity increases?	What are the main features of a series circuit?	What are the main features of a parallel circuit?		

Intervention – AQA Trilogy Physics paper 1 – Foundation

P2 Electricity - Electricity in the home

Why is the current provided by a cell called a direct current (d.c.)?	What is an alternating current (a.c.)?	What kind of current is supplied by mains electricity?	What is the frequency and voltage of mains electricity?
What colours are the live, neutral, and earth wires in a three-core cable?	What is the function of the live wire in a three-core cable?	What is the function of the neutral wire in a three-core cable?	What is the function of the earth wire in a three-core cable?
When is there a current in the earth wire?	Why is the live wire dangerous?	What is the National Grid?	What are step-up transformers used for in the National Grid?
What are step-down transformers used for in the National Grid?	How does having a large potential difference in the transmission cables help to make the National Grid an efficient way to transfer energy?	What two things does energy transfer to an appliance depend on?	What are the units for power, current, potential difference, and resistance?

Intervention – AQA Trilogy Physics paper 1 – Foundation

P3 Particle Model of Matter

Which two quantities do you need to measure to find the density of a solid or liquid?	What happens to the particles in a substance if its temperature is increased?	Why are changes of state physical changes?	Why is the mass of a substance conserved when it changes state?
What is the internal energy of a substance?	Why does a graph showing the change in temperature as a substance cools have a flat section when the substance is changing state?	What is the name given to the energy transferred when a substance changes state?	What is the specific latent heat of a substance?
What is the specific latent heat of fusion a substance?	What is the specific latent heat of vaporisation of a substance?	On a graph of temperature against time for a substance being heated up or cooled down, what do the flat (horizontal) sections show?	What property of a gas is related to the average kinetic energy of its particles?
What causes the pressure of a gas on a surface?	Give two reasons why the pressure of a gas in a sealed container increases if its temperature is increased.	Define specific heat capacity	

Intervention – AQA Trilogy Physics paper 1 – Foundation

P4 Atomic Structure

Describe the basic structure of an atom.	Describe the plum pudding model of the atom.	What charges do protons, neutrons, and electrons carry?	Why do atoms have no overall charge?	What is the radius of an atom?	What is meant by the half-life of a radioactive source?
How small is a nucleus compared to a whole atom?	How can an electron move up an energy level?	What is ionisation?	What is formed if an atom loses an electron?	How does an atom become a negative ion?	What is irradiation?
What is the atomic number of an element?	What is the mass number of an element?	Which particle do atoms of the same element always have the same number of?	What are isotopes?	What were the two main conclusions from the alpha particle scattering experiment?	What is radioactive contamination?
What are the three types of nuclear radiation?	What is gamma radiation?	Which type of nuclear radiation is the most ionising?	What is the range in air of alpha, beta, and gamma radiation?	Which materials can stop alpha, beta, and gamma radiation?	
Which type of nuclear radiation does not cause a change in the structure of the nucleus when it is emitted?	What are the equation symbols for alpha and beta particles?	What is radioactive activity?	What unit is used to measure the activity of a radioactive source?	What is 'count-rate'?	