STOKE DAMEREL

Aspire Achieve Thrive

## Spring Term
## Term 2

# Triple Science

## Year 10

**Name: _____**

**Tutor: _____**

Aspire | Achieve | Thrive

GREENSHAW LEARNING TRUST

# Year 10 Homework Timetable

| | | | |
|---|---|---|---|
| **Monday** | English Task 1 | Ebacc Option A Task 1 | Option C Task 1 |
| **Tuesday** | Option B Task 1 | Sparx Science | Science Task 1 |
| **Wednesday** | Sparx Maths | Option C Task 2 | Sparx Science |
| **Thursday** | Ebacc Option A Task 2 | Sparx Maths | Option B Task 2 |
| **Friday** | Sparx Science | Science Task 2 | English Task 2 |

**Sparx Science**

- **Complete 100% of their assigned homework each week**

**Sparx Maths**

- **Complete 100% of their assigned homework each week**

| Option A (EBACC) |
|---|
| Computer Science |
| Languages |
| Geography |
| History |

| Option B |
|---|
| Business Studies |
| Hospitality and Catering |
| Drama |
| Music |
| Geography |
| Health and Social Care |
| ICT |
| Media Studies |
| Music |
| Sport |
| Travel and Tourism |

| Option C |
|---|
| Art |
| Business Studies |
| Hospitality and Catering |
| Computer Science |
| Drama |
| Photography |
| Science (Triple) |
| Sport |

| Half Term 3 (6 weeks) - Year 10 | | |
|---|---|---|
| **Week / Date** | **Homework task 1<br>Cornell Notes** | **Homework task 2 and 3<br>Exam Questions** |
| Week 1<br>5th January 2026 | Complete 1 page of retrieval quizzing | Complete the exam questions.<br><br>Fill the remainder of the page with retrieval quizzing on your Red and Amber questions |
| Week 2<br>12th January 2026 | Complete 1 page of retrieval quizzing | Complete the exam questions.<br><br>Fill the remainder of the page with retrieval quizzing on your Red and Amber questions |
| Week 3<br>19th January 2026 | Complete 1 page of retrieval quizzing | Complete the exam questions.<br><br>Fill the remainder of the page with retrieval quizzing on your Red and Amber questions |
| Week 4<br>26th January 2026 | Complete 1 page of retrieval quizzing | Complete the exam questions.<br><br>Fill the remainder of the page with retrieval quizzing on your Red and Amber questions |
| Week 5<br>2nd February 2026 | Complete 1 page of retrieval quizzing | Complete the exam questions.<br><br>Fill the remainder of the page with retrieval quizzing on your Red and Amber questions |
| Week 6<br>9th February 2026 | Complete 1 page of retrieval quizzing | Complete the exam questions.<br><br>Fill the remainder of the page with retrieval quizzing on your Red and Amber questions |

| Half Term 4 (6 weeks) - Year 10 | | |
|---|---|---|
| **Week / Date** | **Homework task 1<br>Cornell Notes** | **Homework task 2 and 3<br>Exam Questions** |
| Week 7<br>23rd February 2026 | Complete 1 page of retrieval quizzing | Complete the exam questions.<br><br>Fill the remainder of the page with retrieval quizzing on your Red and Amber questions |
| Week 8<br>2nd March 2026 | Complete 1 page of retrieval quizzing | Complete the exam questions.<br><br>Fill the remainder of the page with retrieval quizzing on your Red and Amber questions |
| Week 9<br>9th March 2026 | Complete 1 page of retrieval quizzing | Complete the exam questions.<br><br>Fill the remainder of the page with retrieval quizzing on your Red and Amber questions |
| Week 10<br>16th March 2026 | Complete 1 page of retrieval quizzing | Complete the exam questions.<br><br>Fill the remainder of the page with retrieval quizzing on your Red and Amber questions |
| Week 11<br>23rd March 2026 | Complete 1 page of retrieval quizzing | Complete the exam questions.<br><br>Fill the remainder of the page with retrieval quizzing on your Red and Amber questions |
| Week 12<br>30th March 2026 | Complete 1 page of retrieval quizzing | Complete the exam questions.<br><br>Fill the remainder of the page with retrieval quizzing on your Red and Amber questions |

# WEEK 1 Questions (cover and quiz) - Cell Biology

| Question | Answer |
|---|---|
| When do most cells differentiate in an animal? | Foetal stage |
| When do cells differentiate in a plant? | They can differentiate at any time |
| In animals, what is cell differentiation used for? | Repair of damaged tissues or cells |
| Name two types of microscopes | Light/optical microscope<br>Electron microscope |
| State 2 advantages and disadvantages of a light/optical microscope | Advantages: Portable, easy to use, see colour, inexpensive, live specimens<br>Disadvantages: 2D, low resolution, low magnification |
| State 2 advantages and disadvantages of an electron microscope | Advantage: 3D images, high magnification, high resolution<br>Disadvantage: Expensive, black and white images only, specimen must be dead |
| What is meant by the resolution or resolving power of a microscope? | The fineass of detail that can be seen in an image. The higher the resolution of an image, the more detail it holds. The ability to distinguish between 2 points. |
| How do you calculate magnification? | Magnification = Image size / Actual size |
| How many chromosomes does a human adult cell have? | 46 or 23 pairs |
| What happens to the cell before it divides? | The nucleus disappears, chromosomes becomes short, fat and they double |
| What is produced during mitosis? | Genetically identical daughter cells |
| What is produced during meiosis? | Gametes |
| Why is mitosis important? | Growth, repair and maintaining the chromosome number |
| What do we call a cell with 2 sets of chromosomes? | Diploid |
| What do we call a cell with 1 set of chromosomes | Haploid |
| What type of cell is produced during meiosis in males and females? | Males- sperm<br>Females- egg |
| Write down the definition of diffusion. | The movement of particles from an area of high concentration to an area of low concentration, down a concentration gradient |
| Write down the definition of osmosis. | The movement of water particles from a high water potential to a low water potential (down a concentration gradient), through a partially permeable membrane |
| Write down the definition of active transport. | The movement of particles against a concentration gradient, from a low concentration to a high concentration, requiring energy from respiration |
| State 3 substances that can move by diffusion in animal cells | Oxygen, carbon dioxide and glucose |

**Week 1 Task 1 - 1 Page of retrieval quizzing - do not use full sentences**

**Week 1 Task 2 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

Meiosis and mitosis are different types of division in human cells. Compare the two processes by referring to where each takes place and the kind of products that are made. (6)

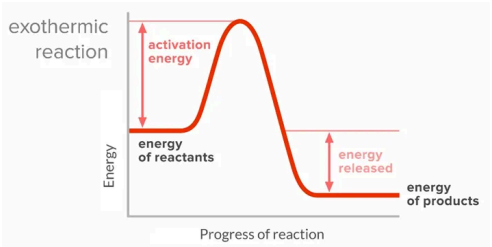
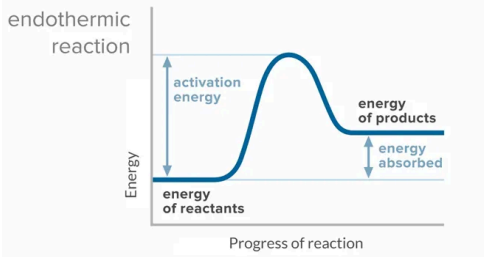
Improvement Work: Meiosis and mitosis are different types of division in human cells. Compare the two processes by referring to where each takes place and the kind of products that are made. (6)

**Week 1 Task 3 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

Explain how fractions are obtained from crude oil by fractional distillation (4 marks)

Improvement Work: Explain how fractions are obtained from crude oil by fractional distillation (4marks)

# WEEK 2 Questions (cover and quiz) - Energy Changes

| Question | Answer |
|---|---|
| Write down the definition of an exothermic reaction. | A reaction in which energy is transferred to the surroundings. |
| Write down the definition of activation energy. | The minimum amount of energy that particles must have to react. |
| Write down the definition of an endothermic reaction. | A reaction which absorbs energy from its surroundings, |
| If the energy required to break bonds is greater than the energy released by making bonds, is the reaction endothermic or exothermic? | Endothermic |
| If the temperature of products is lower than the temperature of the reactants, is the reaction endothermic or exothermic? | Endothermic |
| If the energy required to break bonds is less than the energy released by making bonds, is the reaction endothermic or exothermic? | Exothermic |
| If the temperature of products is greater than the temperature of the reactants, is the reaction endothermic or exothermic? | Exothermic |
| Reaction A: Temperature at the start is 22°C, at the end 28°C. What type of reaction is this? | Exothermic |
| Reaction B: Temperature at the start is 22°C, at the end 14°C. What type of reaction is this? | Endothermic |
| How would you measure whether an endothermic reaction had occurred? | Use a thermometer. Reaction is endothermic if temperature goes down. |
| How would you measure whether an exothermic reaction had occurred? | Use a thermometer. Reaction is exothermic if temperature goes up. |
| Is the chemical reaction that takes place when baking a cake endothermic or exothermic? | Endothermic |
| What needs to be done to make an endothermic reaction happen? | Heat the reactants. |
| Is combustion endothermic or exothermic? | Exothermic |
| Do sports injury packs use an endothermic or exothermic reaction? | Endothermic |
| Do handwarmers use an endothermic or exothermic reaction? | Exothermic |
| Is thermal decomposition endothermic or exothermic? | Endothermic |
| Sketch the reaction profile for an exothermic reaction. |  |
| Sketch the reaction profile for an endothermic reaction. |  |
| Why do all chemical reactions require activation energy in order to take place? | Particles must have sufficient energy to collide with other particles successfully. |

**Week 2 Task 1 - 1 Page of retrieval quizzing - do not use full sentences**

**Week 2 Task 2 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

Describe a method to investigate how the temperature changes when different masses of ammonium nitrate are dissolved in water. You do not need to write about safety precautions. (6)

Improvement Work: Describe a method to investigate how the temperature changes when different masses of ammonium nitrate are dissolved in water. (6)

**Week 2 Task 3 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

Methane is a gas at room temperature but poly(ethene) is a solid at room temperature.
Explain why methane and poly(ethene) exist in different states at room temperature. (4)

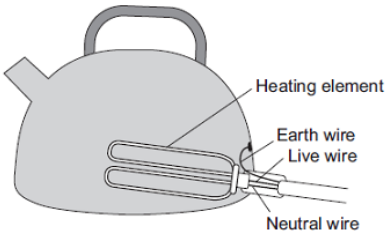
Improvement Work: Methane is a gas at room temperature but poly(ethene) is a solid at room temperature.
Explain why methane and poly(ethene) exist in different states at room temperature. (4)

# WEEK 3 Questions (cover and quiz) - Electricity

| Question | Answer |
|---|---|
| What effect does increasing the number of cells in (series) have on the current in the circuit? | Current decreases, when more cells are added in series to a circuit. |
| What effect does increasing the number of cells (in parallel) have on the current in the circuit? | Current increases, when more cells are added in parallel in a circuit. |
| What effect does increasing the resistance of a circuit have on the current flow in the circuit? | Current decreases, when resistance of a circuit increases. |
| Name the instrument which can be used to measure the potential difference across a bulb in a circuit? | Voltmeter |
| How is the voltmeter connected to a component? In series or parallel? | Parallel, across the component for which the potential difference is being measured. |
| Name the instrument which can be used to measure the current flowing through a circuit? | An ammeter, connected in series. |
| Write down the equation linking power, current and resistance in a circuit. | $P = I^2 \times R$ |
| Which measurements will need to be taken to calculate the resistance of a wire? | Current and potential difference |
| What are the two ways of connecting electrical components in a circuit? | Series or parallel |
| How many paths can current take in a series circuit. | Only one path |
| What does the changing gradient of an I-V graph tell us about the component? | Changes to the component's resistance |
| Is a fixed resistor an ohmic conductor? | Yes, a fixed resistor is an ohmic conductor. |
| What is meant by direct current? | Current that is always in the same direction |
| What is the national grid? | A system of cables, transformers and power stations. |
| What colour is the live wire in a UK mains plug? | Brown |
| What colour is the earth wire in a UK plug? | Yellow/green |
| What colour is the neutral wire in a UK plug? | Blue |
| What is the voltage supply in a main socket in the UK? | 230V |
| What is the frequency of a UK mains supply? | 50 Hertz |
| Which wire is a fuse connected to in the mains UK plug? | Live |
| What is the purpose of the earth wire in a UK plug? | The earth wire provides a path of low resistance for the current to flow through in case the live wire touches the metal casing. |
| What is the voltage across the neutral wire in a plug? | Voltage is close to zero |
| What is the purpose of a fuse inside a mains plug? | Acts as a safety feature, melts if there is a current surge, thus breaking the circuit. |
| What is the relationship between current, power & voltage? | $P = I \times V$ |
| What do we mean by alternating potential difference? | A potential difference continuously varying between one direction and the other (positive and negative). |
| How can you calculate the total resistance of a set of resistors connected in series? | Total resistance is equal to the sum of the resistances of individual components. |
| At which stage of the national grid would you find a step-down transformer? | Between transmission cables and the consumer. |
| At which stage of the national grid would you find a step-up transformer? | After the generator and before the grid cables. |
| What does a step-up transformer do? | Increases the potential difference generated by the power station, so that electrical power can be transmitted at a higher potential. |
| What can happen when insulating materials are rubbed together? | They can become (statically) electrically charged. |
| What happens when two electrically charged objects are brought close together? | They exert a force on each other. |

**Week 3 Task 1 - 1 Page of retrieval quizzing - do not use full sentences**

**Week 3 Task 2 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**



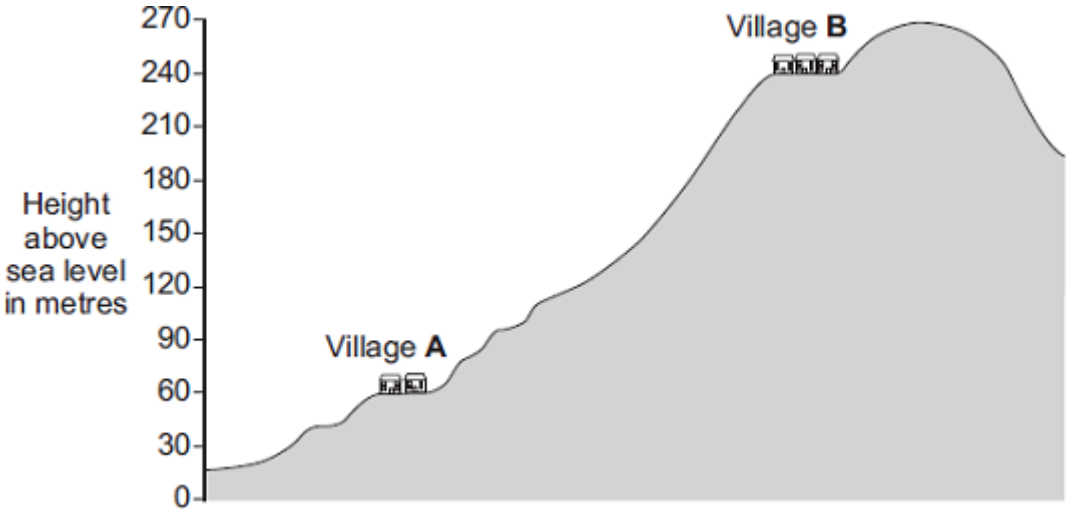

The diagram shows how the electric supply cable is connected to an electric kettle.
The earth wire is connected to the metal case of the kettle.
If a fault makes the metal case live, the earth wire and the fuse inside the plug protect anyone using the kettle from an electric shock. Explain how. (2)

Improvement Work: If a fault makes the metal case live, the earth wire and the fuse inside the plug protect anyone using the kettle from an electric shock. Explain how. (2)

**Week 3 Task 3 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

The level of background radiation from cosmic rays is not the same everywhere. For every 30 metres above sea level, the amount of background radiation increases by one unit.

The diagram shows the position of two villages, **A** and **B**, built on a hill.




How is the amount of background radiation from cosmic rays different in village **A** compared to village **B**?

To obtain full marks, you must include a calculation in your answer. (3 marks)

Improvement Work: How is the amount of background radiation from cosmic rays different in village A compared to village B?

# WEEK 4 Questions (cover and quiz) - Particle Model 2

| Question | Answer |
|---|---|
| What three factors determine the temperature change of a system? | Mass of substance being heated, type of material, energy inputted into the system |
| What is the equation used to calculate the temperature change when a substance is heated? | Energy supplied = mass x specific heat capacity x temperature change |
| Define specific heat capacity. | The amount of energy needed to increase the temperature of 1kg of a substance by 1 degree celsius. |
| What is the unit of specific heat capacity? | J/kg °C |
| How does the internal energy and temperature of a substance change when a change of state occurs? | Internal energy will increase/decrease temperature will remain constant |
| Define specific latent heat | The amount of energy needed to change the state of 1kg of a substance with no change in temperature. |
| What is the equation for the energy required to change state? | Energy absorbed = mass x specific latent heat |
| What is the specific latent heat of fusion? | Energy required to change 1kg of a substance for solid to liquid, without change in temperature. |
| What is the specific latent heat of evaporation? | Energy required to change 1kg of a substance from liquid to gas, without change in temperature. |
| Describe the motion of molecules in a gas. | They move at a range of high speeds in random directions. |
| What factors affect the average kinetic energy of gas molecules? | Temperature of the substance; the higher the temperature the higher the average kinetic energy of the molecules. |
| What effect does increasing temperature have on the pressure of a gas when held at constant volume. | Pressure of the gas will increase as the temperature increases. |
| Why does pressure increase as temperature increases (at a constant volume)? | KE of molecules increases, frequency of collisions between molecule/surface increases, greater force and therefore pressure. |
| If gas A is at low pressure, and gas B is at high pressure, what can be said about the rate of collisions in each gas? | There are more collisions per second in gas B than in gas A. The rate of collisions is higher in B. |
| Describe the force that the pressure of a gas exerts on the walls of its container. | The net force acts at right angles to the containers surface. The force increases as pressure increases. |
| What is the unit used for pressure? | Newtons per metres squared or Pascals |
| What increases when you do work on a gas? | The internal energy of the gas, this can also lead to an increase of temperature. |
| Why does the temperature of air inside a bike pump increase when it is pumped? | Work is done on a gas when it is compressed. Doing work on a gas increases its internal energy. So KE of molecules increases. Temperature increases. |
| What is the relationship between area, force and pressure? | Pressure = force / area |
| Particles in which state have the highest energy? | Gas |
| In which state of matter are the particles closest together? | Solid |
| Which type of energy do particles obtain when heated? | Kinetic |
| How is evaporation different from boiling? | Evaporation occurs at any temperature; boiling happens only at boiling point. |
| What piece of equipment do you use to measure an object's mass? | Top pan balance |
| Why are gases compressible? | The particles in gases are spaced far apart, so there is space for the particles to move closer. |
| What is the SI unit for latent heat? | Joule per kilogram |

**Week 4 Task 1 - 1 Page of retrieval quizzing - do not use full sentences**

**Week 4 Task 2 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

The temperature of the air changed from 20 °C to 0 °C.
The volume of the container of air stayed the same. Explain how the motion of the air molecules caused the pressure in the container to change as the temperature decreased. (3)

Improvement Work: Explain how the motion of the air molecules caused the pressure in the container to change as the temperature decreased. (3)

**Week 4 Task 3 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

There are two types of cell division: mitosis and meiosis.
Describe three differences between the processes of mitosis and meiosis. (3)

Improvement Work: Describe three differences between the processes of mitosis and meiosis. (3)

# WEEK 5 Questions (cover and quiz) - Organic Chemistry

| Question | Answer |
|---|---|
| What type of bond (ionic, metallic or covalent) is found in simple molecules? | Covalent |
| What state (solid, liquid or gas) is crude oil at room temperature? | Liquid |
| How many shared electrons are there in a single covalent bond? | Two |
| Which element forms long chains in simple polymers such as poly(ethene)? | Carbon |
| Which type of compound only contains hydrogen and carbon atoms? | Hydrocarbon |
| Are ‘petrochemicals’ made from petrol, rock or crude oil? | Crude oil |
| How many years (hundreds, thousands or millions) does it take for crude oil to form? | Millions |
| If something is not being made any more, is it described as ‘finite’ or as ‘non-renewable’? | Finite |
| How many litres of crude oil does the world use each second (180, 1800 or 180 000)? | 180 000 |
| Name the two elements found in hydrocarbons. | Carbon; Hydrogen |
| Name the main hydrocarbon found in natural gas. | Methane |
| Diesel oil is being used up faster than crude oil forms. Does this make it a finite resource or a non-renewable one? | Non-renewable |
| Name the polymer formed from ethene, which comes from crude oil. | Poly(ethene) |
| Name the state change that occurs when a gas becomes a liquid. | Condensing /condensation |
| What bonds or forces exist between molecules (ionic, covalent or intermolecular)? | Intermolecular |
| Compared with metals, do simple molecules typically have high boiling points or low ones? | Low |
| Name the method used to separate a mixture of two or more liquids with different boiling points. | Fractional distillation |
| Crude oil is a source of feedstock. Give one other type of useful substance from crude oil. | Fuels |
| Is crude oil described as a finite resource or an infinite resource? | Finite |
| Name a non-renewable fossil fuel obtained from crude oil. | Petrol/ kerosene/ diesel oil/fuel oil |
| What process is used to separate crude oil into useful mixtures? | Fractional distillation |
| Give one use for the gases fraction from crude oil. | Domestic heating/cooking |
| Which fraction is more easily ignited, bitumen or kerosene? | Kerosene |
| Which fraction is more viscous, bitumen or kerosene? | Bitumen |
| Which hydrocarbons have the greater boiling points, the ones with larger molecules or the ones with smaller molecules? | Larger molecules |

**Week 5 Task 1 - 1 Page of retrieval quizzing - do not use full sentences**

**Week 5 Task 2 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

Describe how crude oil is separated into fractions by fractional distillation. (4)

Improvement Work: Describe how crude oil is separated into fractions by fractional distillation. (4)

**Week 5 Task 3 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

Nuclear fission releases energy.

Describe the process of nuclear fission inside a nuclear reactor. (4)

Improvement Work: Nuclear fission releases energy.

Describe the process of nuclear fission inside a nuclear reactor. (4)

# WEEK 6 Questions (cover and quiz) - Working Scientifically

| Question | Answer |
|---|---|
| What is an independent variable? | Variable that causes another variable to change (cause) |
| What is a dependent variable? | Variable that changes because of a change to another variable (effect) |
| What is a control variable? | Variable that we must keep the same during our experiment |
| What goes in the left hand column of a results table? | Independent variable |
| What goes in the right hand column of a results table? | Dependent variable |
| Where do we write the units in a results table? | Column headings |
| What is an anomalous result? | A result that does not fit the pattern / trend. |
| What is the definition of categorical data? | Data that can only have certain values. |
| What is the definition of continuous data? | Data that can have any value on a scale. |
| What type of graph should we draw for continuous data? | Scatter / line |
| What is a hazard? | An object/substance that could cause harm to someone. |
| What is a risk? | The harm that could be caused to someone by a hazard. |
| What is a control measure? | Actions we can take to reduce the risk of harm. |
| What type of graph should we draw for categorical data? | Bar / pie |
| Which variable usually goes on the horizontal axis of a scatter graph? | Independent |
| Which variable usually goes on the vertical axis of a scatter graph? | Dependent |
| What is the difference between a line and a scatter graph? | Line graph looks like a dot to dot; scatter graphs tend to draw a line or curve of best fit. |
| What is the definition of accurate? | How close the measurement is to the actual value. |
| What is the definition of random error? | Difference between measurement and actual value that can’t be predicted |
| What do we call a result that does not fit the pattern or trend? | Anomalous result / outlier |

**Week 6 Task 1 - 1 Page of retrieval quizzing - do not use full sentences**

**Week 6 Task 2 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

A student investigated the effect of different colours of light on the rate of photosynthesis at room temperature. Describe how the student should make accurate measurements to obtain valid results for the rate of photosynthesis. (4)

Improvement Work: Describe how the student should make accurate measurements to obtain valid results for the rate of photosynthesis. (4)

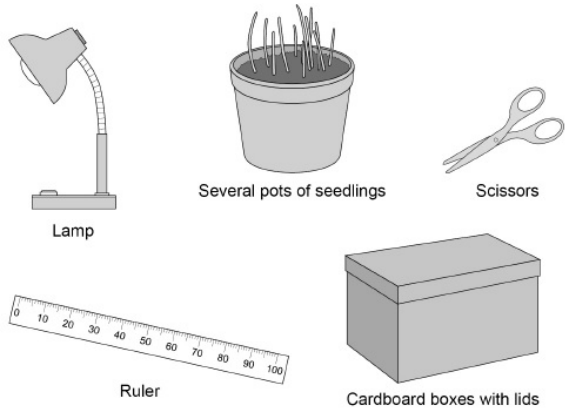
**Week 6 Task 3 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

Plan an investigation to show the effect of light from one direction on the growth of plant seedlings.

Include details of any controls needed.

You may use some of the equipment shown in Figure 1 and any other laboratory apparatus.

Figure 1




Improvement Work:Plan an investigation to show the effect of light from one direction on the growth of plant seedlings.

# WEEK 7 Questions (cover and quiz) - Organisation 2

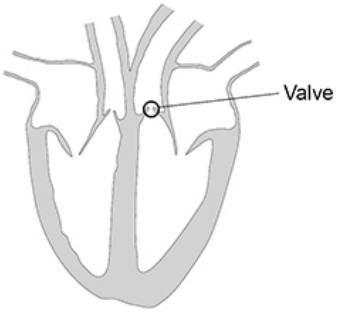
| Question | Answer |
|---|---|
| What are the biconcave cells that contain haemoglobin and carry oxygen around the body in the blood? | Red blood cells. |
| What can be used to reduce cholesterol levels in the blood? | Statins. |
| Which major blood vessel carries oxygenated blood away from the heart? | The aorta. |
| Name the three parts of the human circulatory system. | The blood, blood vessels and the heart. |
| What does the trachea branch into? | The bronchi. |
| What is the definition of a 'double circulatory system'? | The circulation of blood from the heart to the lungs is separate from the circulation of the heart to the rest of the body. |
| What separates your lungs from your abdomen? | The diaphragm. |
| Which chamber of the heart does oxygenated blood flow into? | The left ventricle. |
| Which blood vessel carries deoxygenated blood from the heart to the lungs? | The pulmonary artery. |
| Which bones protect your lungs? | The ribs. |
| What is the name of the long tube that takes air down into the lungs? | The trachea. |
| Which blood vessels have valves and carry deoxygenated blood back to the heart? | The veins. |
| Which major blood vessel carries deoxygenated blood back to the heart? | The vena cava. |
| What do white blood cells do? | They engulf pathogens and make antibodies and antitoxins. |
| What do the lungs do? | They exchange gases between the body and the air. |
| How are the alveoli adapted to diffuse gases in and out of the blood as efficiently as possible? | They have a large surface area, thin walls and a good blood supply. |
| What are stents used for? | To keep narrowed or blocked arteries open. |
| What is the job of the valves in veins? | To stop the blood from flowing in the wrong direction |

**Week 7 Task 1 - 1 Page of retrieval quizzing - do not use full sentences**

**Week 7 Task 2 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

Valves in the heart keep the blood flowing through the heart in one direction.

The diagram below shows the heart with one of the valves labelled.




Explain the effects on a person if the valve labelled in the figure above developed a leak. (4)

Improvement Work: Explain the effects on a person if the valve labelled in the figure above developed a leak. (4)

**Week 7 Task 3 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

A new dog food has been developed that does not contain meat from cows, sheep or chickens.

The new dog food contains insects.

The insects in the dog food factory are fed on waste vegetables.

(a) Sketch the pyramid of biomass for the food chain that produces food for dogs from insects.

Label the pyramid. (2)

Describe two reasons why the biomass of the insects eaten by dogs does not all become biomass of the dogs (2)

Improvement Work:Describe two reasons why the biomass of the insects eaten by dogs does not all become biomass of the dogs (2)

# WEEK 8 Questions (cover and quiz) - Chemical Analysis

| Question | Answer |
|---|---|
| What is crystallisation? | Method of mixture separation where a solvent is evaporated leaving the solid solute behind |
| What is distillation? | A separation technique which means a mixture of two liquids is heated to evaporate the one with the lower boiling point, then condensing this substance into a different container. |
| Why might you use an oil bath to determine the boiling or melting point of a substance? | Oil will be a liquid at higher temperatures than water |
| What is the chemical test for carbon dioxide? | Turns limewater cloudy |
| What is the test for oxygen gas? | Relights a glowing splint |
| What is the test for hydrogen gas? | Burns with a squeaky pop |
| What is the test for chlorine gas? | Chlorine bleaches damp litmus paper |
| A mixture that has been designed as a useful product is called… | A formulation |
| A student wrote down the following description for testing chlorine: "Litmus paper changes from red to blue.” Where has he gone wrong? | Damp litmus paper needs to be used; litmus paper is bleached (turns white; blue litmus paper will turn red first, then white) |
| True or False: Amino acids can be identified using chromatography. | TRUE |
| An unknown gas gives out a squeaky pop when a burning splint is put into it. What is the gas? | Hydrogen |
| Fuels, alloys, fertilisers, pesticides, cosmetics and food products are all types of formulations: True or False? | TRUE |
| Give two examples of formulations. | Fuels, cleaning agents, paints, medicines, alloys, fertilisers and foods (or any other example) |
| How are formulations made? | Mixing the components in carefully measured quantities to ensure the product has the required properties. |
| What test could be used to distinguish between a pure substance and a mixture? | Test melting / boiling point. |
| How do you make a glowing splint? | Blow out a lit splint |
| If a glowing splint relights what gas is present? | Oxygen |
| Is a substance pure or impure if it boils and melts at precise temperatures? | Pure |
| If damp litmus paper is bleached white what gas is present? | Chlorine |
| If lime water turns milky what gas is present? | Carbon dioxide |

**Week 8 Task 1 - 1 Page of retrieval quizzing - do not use full sentences**

**Week 8 Task 2 - Complete the exam question then fill the remainder of the page with retrieval quizzing on your Red and Amber questions on your blue sheet.**

The equation for the decomposition of hydrogen peroxide is:

$$2\ H_2O_2 \rightarrow 2\ H_2O + O_2$$

Describe a test to identify the gas produced in the reaction.

Describe a test to identify the gas produced in the reaction. (2)

Improvement Work: Describe a test to identify the gas produced in the reaction. (2)

**Week 8 Task 3 - Complete the exam question then fill the remainder of the page with retrieval quizzing on your Red and Amber questions on your blue sheet.**

Ragwort is a weed that grows on farmland.
Ragwort is poisonous to horses.
Plan an investigation to estimate the size of a population of ragwort growing in a rectangular field on a farm. (6)

Improvement Work: Plan an investigation to estimate the size of a population of ragwort growing in a rectangular field on a farm. (6)

# WEEK 9 Questions (cover and quiz) - Energy

| Question | Answer |
|---|---|
| What is the exothermic reaction in which glucose is broken down using oxygen to produce carbon dioxide and water and release energy for the cells? | Aerobic respiration. |
| Which type of respiration produces the most energy? | Aerobic respiration. |
| Which type of respiration takes place when there is oxygen present? | Aerobic respiration. |
| Which type of respiration takes place when there is no oxygen present? | Anaerobic respiration. |
| Why does your breathing rate change during exercise? | As your breathing rate increases it increases the amount of oxygen getting into your blood. |
| What needs to be removed from cells after aerobic respiration? | Carbon dioxide and water. |
| What do both types of respiration release that is useful? | Energy. |
| What type of reaction is aerobic respiration? | Exothermic. |
| What is anaerobic respiration in yeast cells also known as? | Fermentation. |
| What is the word equation for aerobic respiration? | Glucose + Oxygen → Carbon dioxide + Water |
| What is the word equation for anaerobic respiration in plants? | glucose → ethanol + carbon dioxide |
| What is the word equation for anaerobic respiration in humans? | glucose → lactic acid |
| What does the liver convert lactic acid into? | Glucose. |
| What carbohydrate do muscles store glucose as? | Glycogen. |
| Where are the enzymes needed for aerobic respiration found in cells? | Inside the mitochondria. |
| During exercise what happens to your breathing rate? | It increases and you breathe more deeply. |
| Why does your heart rate increase during exercise? | It increases the blood flow to the muscles (& around the body) and so the delivery of glucose and oxygen to the respiring cells. |
| What is formed during the incomplete breakdown of glucose in anaerobic respiration? | Lactic acid. |
| The sum of all the reactions taking place in a cell or the body of an organism is called? | Metabolism. |
| What is it called when your muscles stop contracting efficiently? | Muscle fatigue. |
| An example of a metabolic reaction is the conversion of glucose into? | Starch or glycogen or cellulose. |
| Which industries use anaerobic respiration in yeast? | The alcoholic drinks and bread making industries. |
| What is oxygen debt? | The extra oxygen needed after exercise to complete respiration of lactic acid. |
| Why do you breathe more deeply during exercise? | To increase the amount of oxygen being taken in with each breath and you need more energy to be released from respiration. |

**Week 9 Task 1 - 1 Page of retrieval quizzing - do not use full sentences**

**Week 9 Task 2 - Complete the exam question then fill the remainder of the page with retrieval quizzing on your Red and Amber questions on your blue sheet.**

Explain how an increase in blood flow to an athlete's muscles helps them to run. (4)

Improvement Work: Explain how an increase in blood flow to an athlete's muscles helps them to run. (4)

**Week 9 Task 3 - Complete the exam question then fill the remainder of the page with retrieval quizzing on your Red and Amber questions on your blue sheet.**

Galaxies contain billions of stars.
Compare the formation and life cycles of stars with a similar mass to the Sun to stars with a much greater mass than the Sun (6)

Improvement Work: Compare the formation and life cycles of stars with a similar mass to the Sun to stars with a much greater mass than the Sun (6)

# WEEK 10 Questions (cover and quiz) - Organisation

| Question | Answer |
|---|---|
| What is the definition of organ? | A collection of different tissues working together to carry out a specific function. |
| What is the definition of an organ system? | A group of organs that work together to carry out a specific function and form organisms. |
| What is the definition of tissue? | A group of specialised cells with a similar structure and function. |
| What type of animal tissue contracts, bringing about movement? | Muscular tissue. |
| Name the four major plant organs. | Roots / Leaves / Stem / Flower |
| What are the names of the two transport tissues in plants? | Xylem and Phloem. |
| What is cardiovascular disease? | Any disease that involves the heart or blood vessels. |
| What are the three main types of blood vessels? | Arteries, veins and capillaries. |
| Which type of blood vessel carries blood away from the heart? | Arteries. |
| Which blood vessel has a small lumen and a thick layer of muscle and elastic fibres | Artery. |
| What can be used to correct irregularities in the heart rhythm? | Artificial pacemakers. |
| What is the network of tiny vessels linking arteries to veins called? | Capillaries. |
| Which blood vessel has a thin wall that allows diffusion of gases and nutrients? | Capillary. |
| What does the natural pacemaker do? | Controls a group of cells in the right atrium that controls the resting heart rate. |
| What does the vena cava do? | It carries deoxygenated blood from the body into the heart. |
| What does the pulmonary artery do? | It carries deoxygenated blood from the heart to the lungs. |
| What does pulmonary vein do? | It carries oxygenated blood from the lungs to the heart. |
| What does the heart do? | It pumps blood around the body. |
| What does the aorta do? | It takes oxygenated blood away from the heart to the rest of the body. |
| What does plasma do? | It transports blood cells and other substances around the body. |
| What is the name of the fluid part of the blood? | Plasma. |
| Which part of the blood consists of small fragments of blood cells that help clotting? | Platelets. |

**Week 10 Task 1 - 1 Page of retrieval quizzing - do not use full sentences**

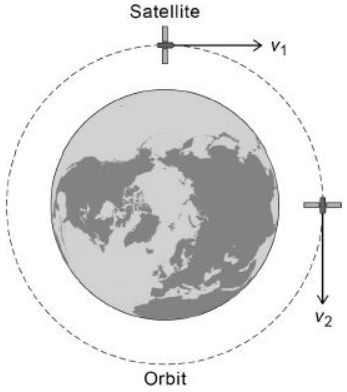
**Week 10 Task 2 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

Arteries and veins have different structures and different functions. Explain how the different structure of arteries and veins relates to their different functions. (6)

Improvement Work: Arteries and veins have different structures and different functions. Explain how the different structure of arteries and veins relates to their different functions. (6)

**Week 10 Task 3 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

A satellite is in a circular orbit around the Earth.
Figure 1 shows the velocity of the satellite at two different positions in the orbit.
Figure 1




Explain why the velocity of the satellite changes as it orbits the Earth (3)

Improvement Work: Explain why the velocity of the satellite changes as it orbits the Earth.(3)

# WEEK 11 Questions (cover and quiz) - Organisation 3

| Question | Answer |
|---|---|
| Enzymes in the stomach work best in what conditions? | Acidic. |
| Enzymes made in the pancreas and small intestines work best in what conditions? | Neutral |
| What are proteins broken down into? | Amino acids. |
| Name three digestive enzymes and what they do? | Amylase breaks down starch to sugar.<br>Protease breaks down proteins to amino acids.<br>Lipase breaks down fats to fatty acids and glycerol. |
| Which enzyme breaks starch into glucose? | Amylase. |
| What is the name for a biological catalyst? | An enzyme. |
| What does bile do? | Bile neutralises the acid added to the food in the stomach and emulsifies fats. |
| What food group is tested using Biuret reagent? | Proteins. |
| What colour does Biuret reagent turn if there are proteins? | Biuret reagent turns from blue to purple in the presence of proteins. |
| What is the chemical symbol for glucose? | $C_6H_{12}O_6$ |
| What do carbohydrates do? | Carbohydrates are used as an energy store. |
| What are simple sugars? | Carbohydrates that contain only one or two sugar units. |
| Cellulose and starch are examples of? | Complex carbohydrates. |
| What do fatty acids do? | Fatty acids are used as an energy store. |
| What does glycerol do? | Glycerol is used as an energy store. |
| Where is bile produced? | In the liver. |
| Where is amylase produced? | In the salivary glands and the pancreas. |
| What happens when you add starch to iodine solution?? | Iodine solution will change from orange-brown to blue-black when starch is present. |
| How is the small intestine adapted to increase absorption of soluble food molecules? | It has a large surface area as it is covered in villi, thin walls and a good blood supply. |
| If the bonds in a protein molecule are broken, by temperature or pH, and the protein loses its shape - what can we say about the protein? | It is denatured. |
| What food group is tested using ethanol? | Lipids. |
| Name the parts of the digestive system? | Mouth, oesophagus, stomach, liver, gallbladder, pancreas, small intestine, large intestine, anus. |

**Week 11 Task 1 - 1 Page of retrieval quizzing - do not use full sentences**

**Week 11 Task 2 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

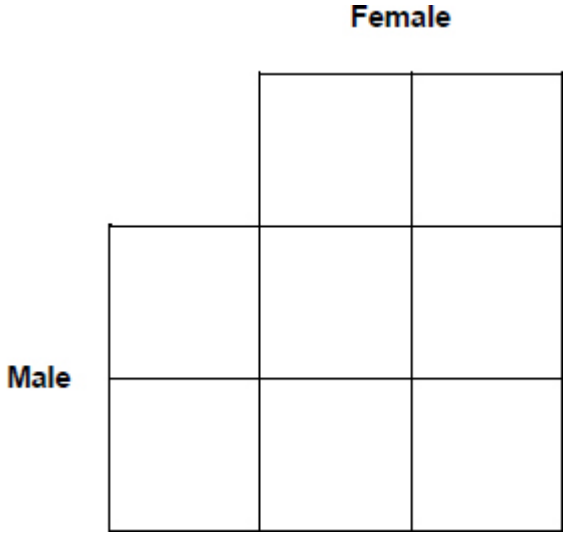
Explain how the structure of enzyme molecules is related to the effect of pH on the activity of amylase. (6)

Improvement Work: Explain how the structure of enzyme molecules is related to the effect of pH on the activity of amylase. (6)

**Week 11 Task 3 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

The sex of dogs is determined by X and Y chromosomes in the same way as in humans. Complete the Punnett square diagram in Figure 1 to show the inheritance of sex in dogs. (3) Use the symbols X and Y.

Figure 1




A female dog gave birth to six offspring.

Why would you expect there to be three male offspring and three female offspring? (1)

Improvement Work: Complete the punnett square and explain why you would expect 3 male offspring and three female

# WEEK 12 Questions (cover and quiz) - Forces

| Question | Answer |
|---|---|
| What is the name given to the single force that is equivalent to all other forces acting on a given object? | The resultant force |
| What does it mean if a force is said to do 'work'? | The force causes an object to be displaced through a distance. |
| What distance must be used when calculating work done? | It must be the distance that is moved along the line of action of the force. |
| What occurs when work is done against frictional forces? | Thermal energy dissipated to the surroundings (energy wasted). |
| What is the relationship between the force applied and the extension of an elastic object? | Extension is directly proportional to the force applied, provided that the limit of proportionality is not exceeded. |
| What is meant by inelastic deformation? | Deformation which results in the object being permanently stretched. |
| What is the equation linking extension, force & spring constant? | Force = spring constant x extension |
| What are the units of force? | Newtons (N) |
| What are the units of extension? | metres (m) |
| What are the units of spring constant? | Newtons / metre (N/m) |
| What type of energy is stored in a spring when it is stretched? | Elastic potential energy |
| What is the opposite action to extending a spring? | Compression (this also causes elastic potential energy to be stored) |
| What is meant by the term fluid? | A liquid or a gas |
| What is acceleration? | The rate of change of velocity. |
| What does an inclined gradient of a velocity time graph tell us about the motion of an object? | It is accelerating |
| What does a flat line on a velocity time graph tell us about the motion of an object? | Constant velocity |
| What does the inclined gradient of a distance time graph tell us about the motion of an object? | The speed of an object. |
| What does a flat line on a distance time graph tell us about the motion of an object? | The object is at rest/stationary |
| What does a diagonal line of constant gradient on a distance time graph tell us about the motion of an object? | The object is moving at constant speed |
| A **velocity time** graph starts with a steep gradient. The gradient gradually decreases until the line becomes flat. Describe the motion of the object in these stages. | Object starts moving with rapid acceleration.<br>Acceleration then decreases until it reaches zero.<br>From that point, the object is moving at constant speed (terminal velocity). |
| A **distance time** graph starts with a steep gradient. The gradient gradually decreases until the line becomes flat. Describe the motion of the object in these stages. | Object initially moving at high speed.<br>Speed then decreases until it reaches zero.<br>From that point, the object is stationary. |
| Which two factors does the stopping distance of a car depend on? | Thinking distance and braking distance |
| What is the relationship between thinking distance, reaction time and speed? | thinking distance = speed x reaction time |
| How would thinking distance change if the speed of the car doubles? | Thinking distance will double |
| How would the braking distance change if the speed of the car doubles? | Braking distance would increase (by a factor of 4). |
| What is the term used to describe the time taken for the driver to see the hazard and press the brake pedal? | Reaction time |

**Week 12 Task 1 - 1 Page of retrieval quizzing - do not use full sentences**

**Week 12 Task 2 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

Atmospheric pollution is emitted by cars. Some car emissions contain nitrogen dioxide. Describe how nitrogen dioxide ($NO_2$) is produced in the engine of a car that burns fossil fuels. (3)

Improvement Work: Atmospheric pollution is emitted by cars. Some car emissions contain nitrogen dioxide. Describe how nitrogen dioxide ($NO_2$) is produced in the engine of a car that burns fossil fuels. (3)

**Week 12 Task 3 - Complete the exam question then fill the remainder of the page with retrieval quizzing. Use full sentences for the exam question, but not the quiz.**

Explain how the intensive farming of pigs increases the efficiency of food production (4)

Improvement Work: Explain how the intensive farming of pigs increases the efficiency of food production (4)

# Aspire ACHIEVE Thrive

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