STOKE DAMEREL

Aspire Achieve Thrive

Summer Term

Term 3

Triple Science

Year 11

Name: _____

Tutor: _____

GREENSHAW LEARNING TRUST

Year 11 Homework Timetable

Monday	Science Task 1	Ebacc Option A Task 1	Option C Task 1
Tuesday	Sparx Science	Option B Task 1	Modern Britain Task 1
Wednesday	English Task 1	Science Task 2	Option C Task 2
Thursday	Ebacc Option A Task 2	Option B Task 2	Sparx Catch Up
Friday	Modern Britain Task 2	English Task 2	Sparx Maths

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

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

Option A (EBACC)
French
Geography
History

Option B
Art
Business Studies
Catering
Computer Science
History
Health & Social Care
Music
Sport
IT

Option C
Business Studies
Childcare
Catering
Drama
Geography
Health & Social Care
Triple Science
Sport

Half Term 5 (6 weeks) - Year 11 Triple Science		
Week / Date	**Homework task 1 Retrieval Practice**	**Homework task 2 and 3 Exam Question**
Week 1 15th April 2024	Complete 1 page of retrieval quizzing RAG rate the questions Answer the questions on Sparx Science	Complete the exam questions. Fill the remainder of the page with retrieval quizzing on your Red and Amber questions Answer the questions on Sparx Science
Week 2 22nd April 2024	Complete 1 page of retrieval quizzing RAG rate the questions Answer the questions on Sparx Science	Complete the exam questions. Fill the remainder of the page with retrieval quizzing on your Red and Amber questions Answer the questions on Sparx Science
Week 3 29th April 2024	Complete 1 page of retrieval quizzing RAG rate the questions Answer the questions on Sparx Science	Complete the exam questions. Fill the remainder of the page with retrieval quizzing on your Red and Amber questions Answer the questions on Sparx Science
Week 4 6th May 2024	Complete 1 page of retrieval quizzing RAG rate the questions Answer the questions on Sparx Science	Complete the exam questions. Fill the remainder of the page with retrieval quizzing on your Red and Amber questions Answer the questions on Sparx Science
Week 5 13th May 2024	Complete 1 page of retrieval quizzing RAG rate the questions Answer the questions on Sparx Science	Complete the exam questions. Fill the remainder of the page with retrieval quizzing on your Red and Amber questions Answer the questions on Sparx Science
Week 6 20th May 2024	Complete 1 page of retrieval quizzing RAG rate the questions Answer the questions on Sparx Science	Complete the exam questions. Fill the remainder of the page with retrieval quizzing on your Red and Amber questions Answer the questions on Sparx Science
Week 7 3rd June 2024	Complete 1 page of retrieval quizzing RAG rate the questions Answer the questions on Sparx Science	Complete the exam questions. Fill the remainder of the page with retrieval quizzing on your Red and Amber questions Answer the questions on Sparx Science

Week 8 10th June 2024	Complete 1 page of retrieval quizzing RAG rate the questions Answer the questions on Sparx Science	Complete the exam questions. Fill the remainder of the page with retrieval quizzing on your Red and Amber questions Answer the questions on Sparx Science

WEEK 1 Questions (cover and quiz) - Chemical Changes

Question	Answer
What term describes a substance that attacks metals, stonework and skin?	Corrosive
What type of substance turns litmus paper red?	Acid
What happens in all chemical reactions?	New substances are formed.
What kind of reaction occurs between an acid and an alkali?	Neutralisation
What do you call a solution which is neither acidic nor alkaline?	Neutral
Give the name and formula of a common laboratory acid.	Hydrochloric acid (HCl), nitric acid (HNO_3), sulfuric acid (H_2SO_4), etc
Which ion is in excess in all acid solutions?	Hydrogen ions or H+ ions
Which ion is in excess in all alkali solutions?	Hydroxide ions or OH– ions
What scale is used for measuring acidic and alkaline properties?	The pH scale
Name three examples of acid/alkali indicators apart from universal indicators.	Litmus, methyl orange and phenolphthalein
What pH values are acidic?	Below 7
What happens to the pH as the H+ ion concentration increases?	It decreases
If a solution has the same concentration of hydrogen ions as hydroxide ions, how is it described?	Neutral or pH = 7
What word describes a solution that contains a large amount of solute in a small volume of solvent?	Concentrated
How can a solution be made more dilute?	By adding solvent/water
What kind of reaction occurs between an acid and a base?	Neutralisation
What is formed when an acid reacts with a base like a metal oxide?	Salt + water
What acid would be used to make zinc sulphate from zinc oxide?	Sulfuric acid
What process can be used to separate an insoluble solid from a liquid?	Filtration
How can a sample of a dissolved salt be obtained from a salt solution?	Evaporation of the water

Questions (cover and quiz) - Homeostasis

Name three internal conditions in the body that are controlled.	Temperature, water level, blood glucose concentration.
What is the definition of homeostasis?	The regulation of the internal conditions of a cell or organism to maintain optimum conditions in response to internal or external changes.
Why do the internal conditions of a cell or organism need to be maintained?	To maintain optimal conditions for enzyme actions and cell functions.
Which two types of responses are used in homeostasis?	Nervous and chemical response.
What are the three main features of a control centre?	Receptors, coordination centres and effectors.
What do receptors do?	Detects changes in the internal or external environment.
What do coordination centres do?	They receive and process information from receptors.
What do effectors do?	They bring about responses to stimuli.
What keyword refers to a change in the internal or external environment that can be detected by receptors?	Stimulus.
Which type of neuron connects a receptor to a coordination centre?	A sensory neuron.
Which type of neuron connects a coordination centre to an effector?	A motor neuron.
What are the two types of effector?	Muscles and glands.
What is a nerve?	A bundle of neurones.
What is the central nervous system made up of?	The brain and the spinal cord.
What is a reflex reaction?	An automatic response that does not involve conscious thought.
List the parts of a reflex arc in order.	Stimulus, receptor, sensory neuron, relay neurone (coordination centre), motor neurone, effector, response.
What are the three types of neurons?	Sensory neuron, relay neurone, motor neurone.
What connects a sensory neuron to a motor neuron?	A relay neurone.
What is a reflex arc?	The pathway of structures involved in an automatic (reflex) reaction.
What is the junction between two neurones called?	A synapse.
What name is given to chemicals that diffuse across a synapse?	Neurotransmitters
Which two organ systems are involved in homeostasis?	The nervous system and the endocrine system.
Which part of the body releases hormones?	Glands.
How are hormones carried around the body?	In the blood.
What is a hormone?	A chemical messenger that is carried in the blood and affects a target organ (or organs).
Which body system involved in homeostasis causes fast, short lasting responses?	The nervous system.

Date: 15th April 2024

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

Date: 15th April 2024

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.

A stimulus from the hot pan will cause the muscle in the arm to contract and move the finger away. Describe how the stimulus from the hot pan reaches the muscle in the arm.(4)

Improvement Work: Describe how the stimulus from the hot pan reaches the muscle in the arm.(4)

Date: 15th April 2024

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.

A student is given a tube containing a liquid nutrient medium. The medium contains one type of bacterium. The student is told to grow some of the bacteria on agar jelly in a Petri dish.
Describe how the student should prepare an uncontaminated culture of the bacterium in the Petri dish.
You should explain the reasons for each of the steps you describe.

Improvement Work: Describe how the student should prepare an uncontaminated culture of the bacterium in the Petri dish.

WEEK 2 Questions (cover and quiz) - Forces

Question	Answer
Newton's second law can be expressed as an equation. Write down the equation.	Resultant force = mass x acceleration
What is the equation linking acceleration, change in velocity and time?	acceleration = change in velocity / time
What is the SI unit of velocity?	metres per second
What is the SI unit of acceleration?	metres per second per second | metres per second squared
Write down the definition of inertia.	The tendency of objects to continue in their state of rest or of uniform motion.
What is Newton's first law of motion?	No resultant force = no change in motion (object carries on moving at constant speed or remains stationary)
What is Newton's second law of motion?	If there is a resultant force, then the object's velocity will change (either speed or direction of motion), i.e. it will accelerate or decelerate.
What is Newton's third law of motion?	When two bodies interact, they apply forces to one another that are equal in magnitude and opposite in direction
What is the acceleration of an object in free fall on the earth's surface?	9.81 metres per second squared
When a parachutist first jumps out of an aeroplane, is the resultant force large, small, or zero?	LARGE - weight much bigger than drag force.
As the parachutist's speed increases, does the resultant force increase or decrease?	DECREASE - drag force increases as speed increases but weight remains constant.
When the parachutist reaches top speed, is the resultant force large, small, or zero?	ZERO - drag force equal to weight so the parachutist stops accelerating.
What is the maximum speed reached by an object called?	Terminal velocity
How can the maximum speed of objects be increased?	Make them more streamlined to reduce drag; increase force supplied by the engine.
Triple: True or False: The Moon orbits the earth in approximately a circular orbit. It travels at constant speed. This means it is not accelerating.	FALSE - its direction constantly changes therefore it constantly accelerates.
Triple: In which direction does the Moon accelerate as it orbits the Earth?	Towards the Earth
What is the equation linking momentum, mass and velocity?	Momentum = mass x velocity
What is the symbol equation linking momentum, mass and velocity?	p = m x v
What are the units of momentum?	kgm/s
What is the law of conservation of momentum?	Total momentum before an event = total momentum after the event, in a closed system.
What is meant by a closed system?	A system in which no matter can enter or escape.
Triple: Why do bike helmets / crash barriers / seat belts / airbags reduce the force on a person in the event of a crash?	Increases the time over which a change in momentum happens, which reduces the rate of change of momentum, i.e. the force.
Triple: What equation links moment, force and perpendicular distance?	Moment = force x perpendicular distance
Triple: What are the units of moments?	Newton Metres (Nm)
Triple: State the principle of moments.	Sum of clockwise moments = sum of anticlockwise moments for an object at equilibrium.

Questions (cover and quiz) - Chemical Changes 2

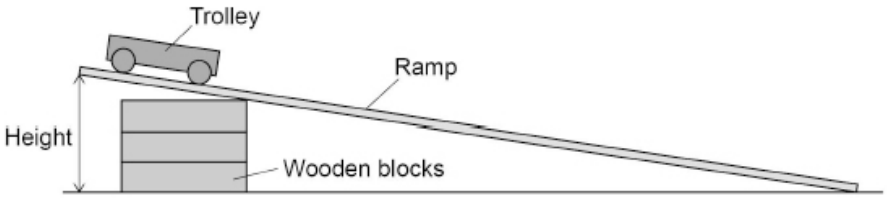
In general, what is the pH of an alkaline solution?	Greater than 7
What colour is the litmus paper in acidic solutions?	Red
What name is given to substances that react with acids to form a salt and water only?	Bases
Which salt is formed when copper oxide reacts with sulfuric acid?	Copper sulphate
What type of solution has a pH of 7?	Neutral
Name the salt produced when sodium hydroxide reacts with hydrochloric acid.	Sodium chloride
What name is given to substances that are soluble bases?	Alkalis
Name a piece of apparatus used to measure volumes of liquid.	Measuring cylinder/ pipette/ burette
Name the separation method used to produce crystals from a solution.	Crystallisation
Name the acid needed to make ammonium nitrate.	Nitric acid
Which acid is needed to make copper sulphate?	Sulfuric acid
Which base is needed to make copper sulphate?	Copper oxide
What is the name of the salt formed from zinc oxide and hydrochloric acid?	Zinc chloride
Which gas is formed when dilute hydrochloric acid reacts with magnesium?	Hydrogen
Which gas is formed when dilute hydrochloric acid reacts with magnesium carbonate?	Carbon dioxide
What is the chemical test for hydrogen?	It gives a squeaky pop with a lighted splint
What is seen when magnesium is added to dilute sulfuric acid?	Effervescence/ fizzing/ bubbles
Which gas is produced when copper carbonate is added to dilute nitric acid?	Carbon dioxide
What is the chemical test for carbon dioxide?	It turns limewater milky.
What do we call the liquid that dissolves a solute to form a solution?	Solvent

Date: 22nd April 2024

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

Date: 22nd April 2024

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.



A student investigated how the height of a ramp affects the acceleration of a trolley down the ramp. Plan an investigation to determine how the height of the ramp affects the acceleration of the trolley. (6)

Improvement Work: A student investigated how the height of a ramp affects the acceleration of a trolley down the ramp. Plan an investigation to determine how the height of the ramp affects the acceleration of the trolley. (6)

Date: 22nd April 2024

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.

Describe, in as much detail as you can, the life history of a star like our Sun (6 marks)

Improvement Work: Describe, in as much detail as you can, the life history of a star like our Sun.

WEEK 3 Questions (cover and quiz) - Waves

Question	Answer
What are the two main categories of waves?	Transverse and longitudinal
What is a transverse wave?	A wave for which the oscillations are perpendicular to the direction of energy transfer.
What is a longitudinal wave?	A wave for which the oscillations are parallel to the direction of energy transfer.
Give two examples of transverse waves.	Electromagnetic waves (e.g. light, X rays), Seismic (S) waves, water waves
Give two examples of longitudinal waves.	Sound waves, Seismic (p) waves
What are the two parts of a longitudinal wave called?	Compressions and rarefactions
What is a wave's amplitude?	The maximum displacement of a point on a wave from its undisturbed position.
What is wavelength?	The distance from a point on a wave to the same position on the adjacent wave. Most commonly peak to peak or trough to trough.
What is the frequency of a wave?	The number of waves that pass a given point each second / the number of oscillations per second.
What is the unit used for frequency?	Hertz, Hz
What is meant by a frequency of 200Hz?	200 waves pass a given point each second / a point oscillates 200 times every second.
What is wave speed?	The speed at which the wave moves through a medium.
What does a wave transfer?	Energy
What is the relationship between frequency, wavelength and wave speed?	wave speed = frequency x wavelength
What is the SI unit of wave speed?	metres per second
What is the SI unit of wavelength	metres
What word is used to describe when a wave bounces off a surface?	Reflection
How do sound waves travel through a solid?	The particles in the solid vibrate and transfer kinetic energy through the material.
Which type of waves do not require a medium to travel through?	Electromagnetic waves.
Order the types of EM radiation from lowest to highest frequency.	Radio waves, Microwaves, Infrared, Visible light, Ultraviolet, X-rays, Gamma rays
How do the speeds of EM radiation differ in a vacuum and in air?	EM waves all travel at the same speed in a vacuum and in air.
At what speed do EM waves travel through a vacuum / air?	3.0×10^8 m/s
What word is used to describe when a wave changes direction as it moves from one material to another?	Refraction
In which direction (relative to the normal) do waves refract when entering a denser medium?	They bend towards the normal The angle of refraction is less than the angle of incidence
What health effects can ultraviolet waves cause?	They can cause the skin to age prematurely They can increase the risk of developing cancer
What health effects can X-rays and gamma rays cause?	They are ionising radiation so can cause mutations in genes. They can lead to increased risk of developing various cancers.
Give three practical uses for infrared radiation	Electrical heaters, cooking food Infrared cameras
Give two practical uses for microwave radiation	Satellite communications, Cooking food
Give two practical uses for radio waves.	Television transmission, Radio transmission

Questions (cover and quiz) - Homeostasis

Which body system involved in homeostasis causes slow, long lasting responses?	The endocrine system.
Which two hormones can cause rapid responses?	Insulin and adrenaline.
Which hormone is involved in the 'fight or flight' response?	Adrenaline.
Which gland secretes several different hormones and controls and coordinates other glands?	The pituitary gland.
Where in the body is the pituitary gland?	The brain.
Which hormone does FSH (follicle stimulating hormone) stimulate the ovaries to release?	Oestrogen.
Which hormone stimulates the release of oestrogen from the ovaries?	FSH (follicle stimulating hormone).
Which gland secretes FSH (follicle stimulating hormone)?	The pituitary gland.
Which hormone controls blood glucose levels?	Insulin.
Where is insulin released from?	The pancreas.
What does insulin do?	Insulin causes glucose in the blood to move into cells to be turned into glycogen and stored in the liver and muscles.
How is excess glucose stored in the human body?	As glycogen in the liver and muscles.
Which two hormones interact in a negative feedback cycle to control blood glucose levels?	Insulin and glucagon.
Which hormone causes glycogen in the liver to be converted back into glucose?	Glucagon.
When is glucagon released by the pancreas?	When blood glucose levels fall below the ideal level.
What is the difference between glucagon and glycogen?	Glucagon is a hormone that is released when blood glucose concentrations fall below the ideal level, glycogen is a complex carbohydrate used to store excess glucose in the body.
Which disease is caused if your pancreas does not produce enough insulin?	Type 1 diabetes.
Which disease is caused if your body stops responding to insulin made by the pancreas?	Type 2 diabetes.
Which type of diabetes usually starts in young children and teenagers?	Type 1 diabetes.
Which type of diabetes is more common in older people?	Type 2 diabetes.
Which type of diabetes is linked to obesity and lack of exercise?	Type 2 diabetes.
Which type of diabetes is usually treated with insulin injections?	Type 1 diabetes.
Which type of diabetes is first treated with a controlled diet and exercise?	Type 2 diabetes.
Which hormone stimulates basal metabolic rate and has a role in growth and development?	Thyroxine.
Which gland releases thyroxine?	The thyroid gland.
Which hormone is released by the adrenal glands during times of fear or distress?	Adrenaline.
Which glands release adrenaline?	The adrenal glands.
What is the effect of adrenaline on the body?	It increases heart rate to increase the delivery of oxygen and glucose to the brain and muscles.
Is adrenaline or thyroxine controlled by negative feedback?	Adrenaline.

Date: 29th April 2024

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

Date: 29th April 2024

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.

Explain how the hormones insulin and glucagon keep the blood glucose concentration at the correct level in a healthy human body. (5)

Improvement Work: Explain how the hormones insulin and glucagon keep the blood glucose concentration at the correct level in a healthy human body. (5)

Date: 29th April 2024

Week 3 Task3 - 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.

Homeostasis keeps conditions in the body relatively constant.
The amount of water in the body is controlled by homeostasis.
Kidney function is controlled by a gland in the brain.
Describe how the water content of the blood is controlled. (6 marks)

Improvement Work: Describe how the water content of the blood is controlled. (6 marks)

WEEK 4 Questions (cover and quiz) - Organisation

Question	Answer
Which type of tumour can be described as a lump of cells that are not invading the body?	A benign tumour.
What key word explains how one factor influences another through a biological process?	A causal mechanism.
What key word describes a link or relationship between two factors?	A correlation
What is a non-communicable disease?	A disease which cannot be passed between people
What is radiotherapy?	A method of treating cancer, where cancer cells are destroyed by targeted doses of radiation.
What is chemotherapy?	A method of treating cancer, where chemicals are used to either stop cancerous cells dividing, or to make them 'self-destruct'.
What is formed by uncontrolled cell division?	A tumour.
What are risk factors?	Aspects of a person's lifestyle or environment that are linked to an increased rate of a disease.
What kind of tumours are contained in one place, not invading other parts of the body?	Benign tumours.
What can long term heavy alcohol use lead to?	Brain damage and death.
Give two cancers that have genetic risk factors.	Breast cancer and ovarian cancer.
What are cancer-causing agents called?	Carcinogens.
What diseases can alcohol cause?	Cirrhosis and liver cancer.
What is FAS?	Foetal alcohol syndrome.
What are three substances present in the environment that can be risk factors?	Ionising radiation, UV light, second hand tobacco smoke.
What kind of tumours can spread around the body?	Malignant tumour cells (cancer).
What are melanomas?	Malignant tumours are often triggered by exposure to UV radiation (skin cancer).
What risks are linked to drinking alcohol during pregnancy?	Miscarriage, stillbirths, premature births and low birthweight.
Exposing a foetus to smoke restricts its levels of?	Oxygen.
What are the two main methods of treating cancer?	Radiotherapy and chemotherapy.
What are three aspects of lifestyle that can be risk factors?	Smoking, lack of exercise, overeating, alcohol consumption.
What can cause cardiovascular disease including coronary heart disease, lung cancer, and lung diseases such as bronchitis and COPD?	Smoking.
Why is sperm not considered to be a tissue?	Sperm do not work together to perform a function.
Name three different carcinogens.	Tar, alcohol, ionising radiation.
What carcinogen is found in tobacco smoke?	Tar.
Which organ does alcohol damage?	The liver.
How can ionising radiation result in cancer?	The radiation penetrates the cells, damages the chromosomes and causes mutations in the DNA.
What do cancer cells do compared to normal cells?	They divide more rapidly and last longer.
What is the danger of a benign tumour?	They grow very quickly, and can put pressure on and damage organs.
How does diet directly affect your risk of diseases?	Through increased levels of cholesterol.
How does diet indirectly affect your risk of diseases?	Through obesity.
Which disease is obesity a strong risk factor for?	Type 2 diabetes.
When does a tumour form?	When cells divide uncontrollably.

Questions (cover and quiz) - Rates of Reaction

What does a horizontal line on a rate of reaction graph mean?	Reaction has stopped
What happens in a reversible reaction between gases in an enclosed system when pressure is increased?	The equilibrium position shifts in the direction of fewer moles of gas (to oppose the increase in pressure)
What happens to the gradient of a line if the rate of reaction is increased?	Becomes steeper.
What is a catalyst?	A substance which increases the rate of reaction but is not used up during the reaction
What is added to anhydrous cobalt chloride to change its colour from blue to pink in a reversible reaction?	Water.
Write down a definition of collision theory using the following keywords: reaction, particles, reactant, energy.	For a chemical reaction to happen the reactant particles must collide with sufficient energy
What is the definition of concentration in chemistry?	Number of particles in a given volume
State Le Chatelier's Principle.	If a system is at equilibrium and a change is made to any of the conditions, then the equilibrium position will shift to oppose the change
What is meant by the term 'activation energy'?	Minimum amount of energy that particles must have to react
What is meant by the term equilibrium?	Forward and reverse reactions occur at the same rate; concentrations of all substances stay constant
What is the definition of the rate of a reaction?	Rate at which reactants are being turned into products / rate at which products are made
What is the name for the minimum amount of energy needed for a reaction to start?	Activation Energy
What is the name of a type of reaction in which the products can reform the reactants easily?	Reversible
What is the word for chemicals which react with each other?	Reactants
What conditions are required for dynamic equilibrium to be reached?	Closed system; apparatus prevents the escape of reactants and products
What three factors can be changed in a system at equilibrium?	Concentration of substances, temperature and pressure
What type of equilibrium exists when the forward and backward reactions happen at the same rate in a closed system?	Dynamic equilibrium
Use Le Chatelier's principle to explain what will happen if there is an increase in temperature of this reaction (the forward reaction is exothermic): $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$	More hydrogen and nitrogen will be made as the backward reaction is endothermic. Equilibrium shifts in the endothermic direction to oppose the increase in temperature.
What will happen to the amount of product in an endothermic reaction (going forward) at equilibrium if the temperature is decreased?	Amount of product (yield) will decrease
What will happen to the amount of product in an endothermic reaction (going forward) at equilibrium if the temperature is increased?	Amount of products (yield) will increase
What will happen to the amount of product in an exothermic reaction (going forward) at equilibrium if the temperature is increased?	Amount of products (yield) will decrease
What would be observed in a container where there is a reversible reaction in dynamic equilibrium?	No visible changes would be observed
What would happen to the position of equilibrium in a gaseous reaction if the pressure is increased?	Equilibrium would shift towards the side with the smaller number of moles of gases

Date: 6th May 2024

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

Date: 6th May 2024

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.

Temperature also affects the rate of the reaction. Explain how increasing the temperature affects the rate of the reaction. You should refer to particles and collisions. (3)

Improvement Work: Temperature also affects the rate of the reaction. Explain how increasing the temperature affects the rate of the reaction. You should refer to particles and collisions. (3)

Date: 6th May 2024

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.

Method 1

- An excess of sodium sulfate solution is added to 25 cm3 of the barium hydroxide solution. A precipitate of barium sulfate is formed.

- The precipitate of barium sulfate is filtered, dried and weighed.

- The concentration of the barium hydroxide solution is calculated from the mass of barium sulfate produced.

Method 2

- 25 cm3 of the barium hydroxide solution is titrated with hydrochloric acid of known concentration.

- The concentration of the barium hydroxide solution is calculated from the result of the titration.

Compare the advantages and disadvantages of the two methods (5 marks

Improvement Work: Compare the advantages and disadvantages of the two method (5 marks)

WEEK 5 Questions (cover and quiz) - Chemical Changes

Question	Answer
When Aluminium oxide is electrolysed what forms at the cathode?	Aluminium
Why is electrolysis used to extract aluminium from its ore?	Aluminium is more reactive than carbon.
Name the compound from which aluminium is extracted.	Aluminium oxide/ bauxite.
In electrolysis positive ions move towards the…?	Cathode (negative electrode)
In electrolysis negative ions move towards the…?	Anode (positive electrode)
Where does oxidation happen in electrolysis?	Anode (positive electrode)
Which electrode is connected to the negative terminal of an electricity supply?	Cathode (negative electrode)
Which electrode is connected to the positive terminal of an electricity supply?	Anode (positive electrode)
Which electrode would you expect to have bromine produced at?	Anode (positive electrode)
Where are hydrogen ions produced?	Cathode (negative electrode)
What is the name of the electrode that the negative ions move to?	Anode.
How do you test for chlorine gas?	bleaches litmus
What is produced at the anode (positive electrode) when lead bromide is electrolysed?	Bromine.
If a metal chloride is being electrolysed what gas will be produced?	Chlorine
What do we call a liquid, containing free moving ions, which is broken down by electricity in the process of electrolysis?	Electrolyte
Why can a molten or dissolved ionic compound conduct electricity?	Free moving ions.
What is oxidation?	gain of oxygen / loss of electrons
What is produced at the cathode (negative electrode) is the metal in the solution is more reactive than hydrogen?	Hydrogen.
Why is electrolysis an expensive way to extract metal from its ore?	Large amounts of energy needed.
What is produced at the cathode (negative electrode) when lead bromide is electrolysed?	Lead.

Questions (cover and quiz) - Homeostasis

What is the main male reproductive hormone?	Testosterone.
Which gland produces testosterone in males?	The testis.
What does testosterone do?	It stimulates sperm production.
After puberty on average how often is an egg released from the ovary?	Approximately every 28 days.
What happens at ovulation?	An egg is released from the ovary.
What term refers to 'the release of an egg from the ovary'?	Ovulation.
Name the four hormones involved in the menstrual cycle.	FSH (follicle stimulating hormone), LH (luteinising hormone), oestrogen, progesterone.
Which hormone causes an egg in the ovary to mature?	FSH (follicle stimulating hormone).
Which hormone stimulates the release of a mature egg from the ovary?	LH (luteinising hormone).
Which hormones are involved in maintaining the uterus lining?	Progesterone and oestrogen.
At what point in the menstrual cycle does a woman have her period?	Day 1-5.
At what point in the menstrual cycle is an egg released?	Day 12-16
Which gland releases LH?	The pituitary gland.
Which gland releases oestrogen?	The ovaries.
What produces progesterone?	The empty follicle after ovulation.
What is produced by the empty follicle after ovulation?	Progesterone.
What is the role of progesterone?	It maintains the uterus lining and inhibits release of FSH and LH.

Date: 13th May 2024

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

Date: 13th May 2024

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.

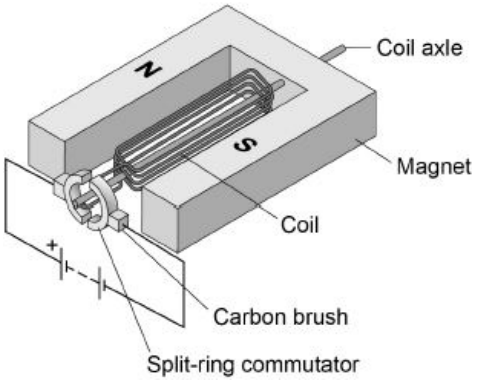
Oxygen is formed at the positive carbon electrodes during the extraction of aluminium from bauxite by electrolysis. Explain why the positive carbon electrodes must be continually replaced. (3)

Improvement Work: Explain why the positive carbon electrodes must be continually replaced. (3)

Date: 13th May 2024

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.

Figure 2 shows a simple electric motor.



When there is a current in the coil, the coil rotates continuously.
Explain why (4 marks)

Improvement Work: When there is a current in the coil, the coil rotates continuously.
Explain why (4 marks)

WEEK 6 Questions (cover and quiz) - Ecology

Question	Answer
What is biodiversity?	The variety of all the different species of organisms on earth, or within an ecosystem.
Why is high biodiversity important?	It ensures the stability of ecosystems by reducing the
How do humans reduce the amount of land available for other species?	By building, quarrying, farming and dumping waste.
What human activities reduce biodiversity?	Habitat destruction (deforestation, building, quarrying, farming), Pollution (air, water, dumping waste)
Why is burning peat as a fuel a problem?	It releases carbon dioxide into the atmosphere.
Explain why the increasing human population is a problem?	Rapid growth in the human population means that increasingly more resources are used and more waste is produced. Unless waste and chemical materials are properly handled, more pollution will be caused dependence of one species on another for food, shelter and the maintenance of the physical environment.
What pollutes water?	Sewage, fertiliser or toxic chemicals.
What pollutes air?	Smoke and acidic gases.
What pollutes land?	Landfill and toxic chemicals.
Why is pollution a problem?	It can kill plants and animals which can reduce biodiversity.
Why are large areas of tropical forests being destroyed?	To provide land for cattle, rice fields and to grow crops for biofuels.
What is deforestation?	The cutting down of large areas of forest.
Which gases in the atmosphere are increasing and contributing to global warming?	Carbon dioxide and methane.
What are the biological consequences of global warming?	Loss of habitats due to flooding, changes in the distribution of organisms due to changes in temperature or rainfall, changes in the migration patterns of animals.
Which gases cause acid rain?	Sulphur dioxide and nitrogen oxides.
What problem is caused by increasing levels of carbon dioxide and methane in the atmosphere?	Global warming.

Questions (cover and quiz) - Waves

What is the speed of sound in air?	330 metres per second.
What is the relationship between frequency of a wave and its time period?	Frequency = 1 / Time period
How do sound waves travel through a solid?	The particles in the solid vibrate and transfer kinetic energy through the material.
What is the frequency range of human hearing?	20 Hertz to 20,000 Hertz (20KHz)
What are ultrasound waves?	Waves which have a frequency higher than the upper limit of human hearing (20KHz)
Give an example for ultrasound waves?	Medical or industrial imaging
What natural event causes seismic waves to be produced? What types are produced?	Earthquakes; They produce both P-waves & S-waves
What property of waves in different mediums causes refraction?	Velocity; Wave speed is slower in denser materials, causing refraction
What type of waves can be produced by oscillations in an electrical circuit?	Radio waves
How can radio waves generate an alternating current in a circuit?	When radio waves are absorbed, they can induce oscillations in a circuit with the same frequency as the waves themselves.
Triple: What wave phenomenon is used by lenses to form an image?	Refraction
Triple: How does a convex lens form an image?	Parallel rays of light are refracted and brought together at a point known as the principal focus.
Triple: What is meant by the focal length of a lens?	The distance from the lens to the principal focus.
Triple: What is the difference between the image produced by a convex and a concave lens?	Convex lenses can produce real or virtual images. Concave lenses can only produce virtual images.
What colour does an object appear if all wavelengths are absorbed?	Black opaque
What do all bodies (objects) emit and absorb?	Infrared radiation
What happens to the quantity of infrared radiation emitted by an object as temperature increases?	The hotter the object, the more infrared radiation it will emit.
What is a perfect black body?	An object that absorbs all of the radiation that is incident upon it.
How much radiation does a perfect black body reflect or transmit?	None
Why is a perfect black body the best possible emitter of radiation?	It is a perfect absorber since it absorbs all radiation incident on it. A perfect absorber is also a perfect emitter
What can be said about the rates of emission and absorption for a body at constant temperature?	The body is absorbing and emitting radiation at the same rate.

Date: 20th May 2024

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

Date: 20th May 2024

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.

Describe the reasons why deforestation takes place and the effects deforestation has on the environment. (6)

Improvement Work: Describe the reasons why deforestation takes place and the effects deforestation has on the environment. (6)

Date: 20th May 2024

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 (6 marks)

Improvement Work: Plan an investigation to show the effect of light from one direction on the growth of plant seedlings (6)

WEEK 7 Questions (cover and quiz) - Organisation

Question	Answer
What do proteins do?	Proteins are used for growth and repair.
What food group is tested using Benedict's?	Simple sugars.
What colour do simple sugars turn Benedict's solution?	Simple sugars turn Benedict's from Blue to Brick Red.
What food group is tested using iodine?	Starch.
Where is lipase produced?	Stomach and pancreas.
What are the two factors that enzyme activity is affected by?	Temperature and pH.
Which organ system absorbs nutrients from food?	The digestive system.
Which organ absorbs water from undigested food?	The large intestine.
Which organ produces bile?	The liver.
What is the name of the theory that explains how enzymes work?	The lock and key theory of enzyme action.
Where is protease produced?	The pancreas.
What does the ethanol test indicate?	The presence of lipids.
In which organs are the products of digestion absorbed into the blood?	The small intestine.
Which organ uses acid to break down large insoluble molecules into smaller soluble molecules?	The stomach.
What is the lock and key mechanism?	The theory of enzyme action.
What do amino acids do?	They are used to form proteins.
What happens to enzymes at high temperatures?	They denature.

Questions (cover and quiz) - Chemical Changes

Question	Answer
What is reduction?	loss of oxygen / Gain in electrons
What is an ore?	Metal compound in a rock.
What is aluminium oxide mixed with to lower its boiling point?	molten cryolite
Ionic compounds need to be either _____or _____ to be electrolysed	Molten or dissolved in water
Why do ionic compounds need to be molten or dissolved to conduct?	Ions (i.e. charge carriers) must be free to move.
What does OIL RIG stand for?	Oxidation is Loss, Reduction is Gain
When Aluminium oxide is electrolysed what forms at the anode?	Oxygen
If metal sulphate is being electrolysed what gas will be produced?	Oxygen
Predict the products of electrolysis of copper sulphate solution	Positive electrode: Oxygen gas; Negative electrode: Copper.
Are hydrogen ions reduced or oxidised at the electrodes?	Reduced
How are metals, less reactive than carbon, extracted from their ores?	Reduction with carbon.
How do you test for oxygen gas?	Relights a glowing splint
What solution have you electrolysed if you get hydrogen gas, chlorine gas and sodium hydroxide produced?	Sodium chloride solution (brine)
Which state do ionic compounds not conduct electricity?	Solid
Why do the carbon anodes need replacing regularly?	They gradually decay away (due to reacting with the oxygen)
How many electrons does an aluminium ion gain at the cathode?	Three
How many electrons do oxygen ions lose at the anode?	Two

Questions (cover and quiz) - Space (Triple Science Only)

Question	Answer
List the objects found in the solar system.	Star, planets, dwarf planets, moons / natural satellites
List the planets in order of distance from the sun.	Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune
Which galaxy is the solar system part of?	Milky Way
List the following from smallest to largest: galaxy, universe, planet, star	Planet, star, galaxy, universe
What force keeps the planets in orbit around the sun?	Gravity
True or False: The Moon orbits the earth in approximately a circular orbit. It travels at constant speed. This means it is not accelerating.	FALSE - its direction constantly changes therefore it constantly accelerates.
In which direction does the Moon accelerate as it orbits the Earth?	Towards the Earth
A satellite is in orbit around the Earth. If it switches its engine on for a short time to increase its speed, what will happen to the radius of its orbit?	It will increase.
Protostars can be thought of as clouds of ...	Dust and gas
Which force pulls clouds of dust and gas together to form stars?	Gravity
What process has to begin for a protostar to be reclassified as a star?	Nuclear fusion
Which two forces act within a main sequence star?	Gravity and radiation pressure
In a main sequence star, the forces are ...	Balanced
What is the most abundant element in a main sequence star?	Hydrogen
When hydrogen nuclei fuse together, the nuclei of which element is formed?	Helium
When smaller stars run out of fuel, what do they become?	Red giants
True or false: a red giant is hotter than a main sequence star.	FALSE
As the outer layers of a red giant drift away, what is left behind?	White dwarf
True or false: a white dwarf is hotter than a black dwarf.	TRUE
When massive stars run out of fuel, what do they become?	Red supergiants
True or false: some massive stars fuse together larger elements to make heavier nuclei like carbon.	TRUE
What is the largest element that can be made via nuclear fusion?	Iron
When nuclear fusion stops in the core of a massive star, what happens?	The core collapses.
When the core of a massive star collapses, what is the name of the explosion it then causes?	Supernova
True or false: the heaviest element that can be produced by a supernova is iron.	FALSE
What two objects may be left behind after a supernova?	Neutron star or black hole
Why is a black hole called a black hole?	It is so dense that even light cannot escape.

What is red shift?	The apparent increase in wavelength of light emitted from distant galaxies.
Does red shift imply objects are moving away from or towards the earth?	Away from earth
If objects are moving faster, will red shift be greater or smaller?	Greater
Red shift has provided evidence for which theory?	Big Bang Theory
What conclusions have been drawn from the red shift observed in distant galaxies?	These galaxies are all moving away from us. This means at some point in the past they must have all been in one place, i.e. at the time of the Big Bang.
True or false: the more distant the galaxies, the greater the red shift that has been observed.	TRUE
If more distant galaxies are moving away faster, what does this imply about the expansion of the universe?	Expansion is accelerating.
Which material has been suggested to exist by the fact that galaxies seem to travel faster the further away they are from the original point of the universe?	Dark matter
Why are scientists uncertain about the origins of the universe?	Difficult to gather evidence.

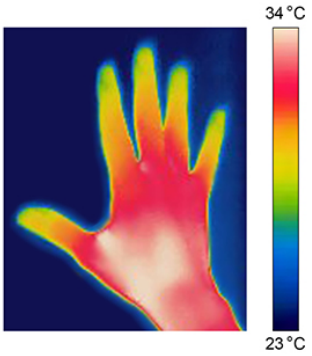
Date: 3rd June 2024

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

Date: 3rd June 2024

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.

Different parts of the electromagnetic spectrum are used in medical imaging. Figure 1 shows a Figure of a person's hand taken with an infrared camera.



Explain why the infrared camera is able to show that parts of the hand are at different temperatures. (2)

Improvement Work: Explain why the infrared camera is able to show that parts of the hand are at different temperatures. (2)

Date: 3rd June 2024

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.

Compare the medical uses of ultrasound and X-rays.
Your answer should include the risks, if any, and precautions, if any, associated with the use of ultrasound and X-rays (6 marks)

Improvement Work:Compare the medical uses of ultrasound and X-rays (6 marks)

Date: 10th June 2024

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

Date: 10th June 2024

Week 8 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.

Electromagnetic waves are also used in communications. Describe how microwaves and visible light are used in communications. (4)

Improvement Work: Describe how microwaves and visible light are used in communications. (4)

Date: 10th June 2024

Week 8 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.

This question is about the extraction of metals.

(a) Tungsten is a metal.

The symbol of tungsten is W

Tungsten is produced from tungsten oxide by reaction with hydrogen.

The equation for the reaction is:

$$WO_3 + 3\,H_2 \rightarrow W + 3\,H_2O$$

Calculate the percentage atom economy when tungsten is produced in this reaction.

Use the equation:

$$\text{percentage atom economy} = \frac{184}{(M_r\ WO_3) + (3 \times M_r\ H_2)} \times 100$$

Relative formula masses (M_r): $WO_3 = 232$ $H_2 = 2$

Percentage atom economy = _____%

(2)

Aluminium is extracted from aluminium oxide.

(b) 38% of a rock sample is aluminium oxide.

Calculate the mass of aluminium oxide in 40 kg of the rock sample.

Mass of aluminium oxide = _____ kg **(2)**

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