STOKE DAMEREL

Aspire Achieve Thrive

Summer Term

Term 3

Science

Year 10

Name: _____

Tutor: _____

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	Modern Britain Task 1	Science Task 1
Wednesday	Sparx Maths	Option C Task 2	Sparx Science
Thursday	Ebacc Option A Task 2	Sparx Catch Up	Option B Task 2
Friday	Modern Britain Task 2	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)
French
Geography
History

Option B
Art
Business Studies
Catering
Music
Sport
IT
Childcare
Triple Science
Travel and Tourism

Option C
Business Studies
Catering
Drama
Health & Social Care
Sport
Computer Science
Media
Photography
Sociology

Half Term 5 (6 weeks) - Year 10		
Week / Date	**Homework task 1 Cornell Notes**	**Homework task 2 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 question. 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 question. 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 question. 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 question. 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 question. 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 question. Fill the remainder of the page with retrieval quizzing on your Red and Amber questions Answer the questions on Sparx Science

Half Term 6 (7 weeks) - Year 10		
Week / Date	**Homework task 1 Cornell Notes**	**Homework task 2 Exam Question**
Week 7 3rd June 2024	Complete 1 page of retrieval quizzing RAG rate the questions Answer the questions on Sparx Science	Complete the exam question. 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 question. Fill the remainder of the page with retrieval quizzing on your Red and Amber questions Answer the questions on Sparx Science
Week 9 17th June 2024	Complete 1 page of retrieval quizzing RAG rate the questions Answer the questions on Sparx Science	Complete the exam question. Fill the remainder of the page with retrieval quizzing on your Red and Amber questions Answer the questions on Sparx Science
Week 10 24th June 2024	**Mock Exams -** Use your blue retrieval sheet to complete retrieval quizzing	**Mock Exams -** Complete the exam question. Use the printed revision resources (past papers) to prepare for your mock
Week 11 1st July 2024	**Mock Exams -** Use your blue retrieval sheet to complete retrieval quizzing	**Mock Exams -** Complete the exam question. Use the printed revision resources (past papers) to prepare for your mock
Week 12 8th July 2024	Complete 1 page of retrieval quizzing RAG rate the questions Answer the questions on Sparx Science	Complete the exam question. Fill the remainder of the page with retrieval quizzing on your Red and Amber questions Answer the questions on Sparx Science
Week 13 15th July 2024	Complete 1 page of retrieval quizzing RAG rate the questions Answer the questions on Sparx Science	Complete the exam question. 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) - Atmosphere

Question	Answer
What element forms most of Earth's atmosphere today?	Nitrogen
Which element that makes up about 21% of the atmosphere of Earth today was not thought to be present in the atmosphere 4.5 billion years ago?	Oxygen
As the Earth evolved, chemical reactions with what element are thought to have slowed the release of oxygen to the atmosphere?	Iron
What gas given out by volcanoes is thought to have condensed to form oceans?	Water vapour
What factor has caused changes in Earth's atmosphere but is not found on Venus or Mars?	Life
What is the chemical test for oxygen?	Relights a glowing splint
Why did the formation of the Earth's early oceans cause a decrease in atmospheric carbon dioxide concentrations?	The carbon dioxide dissolved in the water
What do some sea creatures use dissolved carbon dioxide to help them do?	Form shells
What sort of chemical compound are shells made from: an oxide, a carbonate or a chloride?	Carbonate
What is the formula for calcium carbonate?	$CaCO_3$
What process in plants and algae causes a reduction of atmospheric carbon dioxide concentrations?	Photosynthesis
Photosynthesis affects the concentrations of two gases in the atmosphere – carbon dioxide, and what other gas?	Oxygen
Give the name of some of the earliest photosynthetic microorganisms.	Cyanobacteria/algae
Certain gases in the atmosphere keep the Earth warm. What is this effect called?	Greenhouse effect
Name three greenhouse gases.	Methane, carbon dioxide, water vapour,
Energy is transferred from the Sun by what?	(infrared/ electromagnetic) radiation/ waves/ light
The warm Earth emits what type of (electromagnetic) waves?	Long wavelength Infrared
In an atmosphere containing greenhouse gases, what happens to some of the infrared waves that the Earth emits?	Absorbed (and re-emitted in all directions)
Why do modern thermometers give better quality evidence than those from the 18th century?	Thermometers are now more accurate/ have a better resolution
What word (beginning with c) describes the way in which two variables appear to be linked because they show similar patterns of change?	Correlation
What term is used to describe the changes to average weather conditions around the world?	Climate change
Evidence for carbon dioxide variations over the last 800 000 years comes from Antarctica. In what form is this evidence?	Ice cores
What type of human activity has mainly increased the level of greenhouse gases since 1750?	Burning fossil fuels
The acidity of the oceans is increasing due to more carbon dioxide dissolving in the water. What is this doing to the pH of the oceans?	Decreasing it/making it more acidic

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.

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. (6)

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. (6)

WEEK 2 Questions (cover and quiz) - Forces

Question	Answer
What piece of equipment can be used to measure an object's weight?	A calibrated spring-balance or newtonmeter.
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
Triple: In any fluid, at what angle do the forces due to pressure act on a given surface?	At right angles (normal) to the surface
Triple: State the equation relating pressure, force and area.	Pressure = Force/ Area
Triple: What are the units of area?	metres squared (m^2)
Triple: What are the units of pressure?	Pascals (Pa)
Triple: Write down 1 Pascal in terms of Newtons and metres squared.	1 Pa = 1N/m^2
Triple: What is the Earth's atmosphere?	A thin (relative to the magnitude of the Earth) layer of gas surrounding the Earth.
Triple: What happens to the density of the atmosphere with increasing altitude?	The atmosphere becomes less dense as altitude increases.
Triple: Why does atmospheric pressure decrease with an increase in height?	As height increases, density of air molecules decreases. As density of air molecules decreases, frequency of collisions between air molecules and an object decreases. As frequency of collisions decreases, force on the object decreases. As force decreases, pressure decreases.
Triple: What is upthrust always equal to?	The weight of the fluid that the object displaces.
Triple: What factors influence whether an object will sink or float?	Upthrust, Weight, Density of fluid
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. Acceleration then decreases until it reaches zero. 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. Speed then decreases until it reaches zero. 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
What factors can increase the thinking distance of a car?	Using a mobile phone, speed, intoxications, distractions
What factors can increase the braking distance of a car?	poor road conditions, poor driving weather, poor tyre condition, poor condition of the brakes, speed
What is the distance moved by a car during the reaction time called?	thinking distance

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.

Figure 1

The man increases Force A. Explain what happens to Force B and to the movement of the man. (4)

Improvement Work: The man increases Force A. Explain what happens to Force B and to the movement of the man. (4)

WEEK 3 Questions (cover and quiz) - Cell Biology

Question	Answer
How can we increase the rate of diffusion?	Increase the concentration gradient, decrease the diffusion distance/thickness of surface, increase the surface area
How is a root hair cell adapted for osmosis?	Lots of hairs/projections that increase the surface area so more water can be absorbed.
How are cells in the small intestine adapted for active transport?	Many mitochondria release energy for active transport. Villi to increase surface area. Good blood supply to maintain concentration gradient.
How are fish gills adapted for efficient exchange?	Large surface area on gills, constant concentration gradient between blood and water, thin diffusion pathway
What is required for active transport?	Energy from respiration
What is a concentration gradient?	The difference between two concentrations
Define the terms solute and solvent	Solute- Soluble solid/substances that dissolves Solvent- A liquid that the dissolves the solute
What are the differences between hypertonic, hypotonic and isotonic?	Hypertonic- less solute inside the cell, more outside Hypotonic- more solute inside, less outside Isotonic- same amount of solute inside/outside cell
How are single-celled organisms adapted to efficient transport of molecules?	Have a large surface area to volume ratio. This allows sufficient, quick transport of molecules into and out of the cell.
What is a stem cell?	An undifferentiated cell that has the potential to specialise
Name another type of stem cell found in animals	Embryonic stem cells
Where are embryonic stem cells found?	Embryos, umbilical cord
Where are adult stem cells found?	Bone marrow
What is a plant stem cell called?	Meristems
Where would you find plant stem cells?	Meristem (tip of plant)
How are plant stem cells different from adult stem cells or embryonic stem cells?	They can differentiate at any time, throughout the life of the plant
What is an advantage of using plant stem cells?	Can be used to produce clones of plants quickly and economically. Rare species can be cloned and prevented from extinction. Crop plants with special (e.e disease resistance) can be cloned to produce lots of identical plants for farmers
What are the advantages of using adult stem cells?	Easier to obtain, effective, no ethical issues, abundant supply, little or no problems with immune rejection
What are the advantages of using embryonic stem cells?	Can differentiate into any type of cell. Potential to cure diseases such as blindness, diabetes and cancers
Why might people be against the use of stem cells?	Ethical reasons surrounding the use of embryos, may not know the side effect, infection, expensive, potential rejection

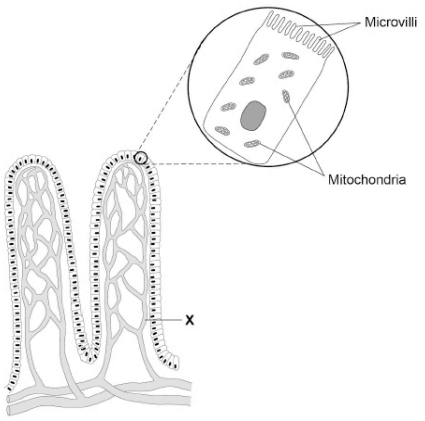
Date: 29th April 2024

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.

Figure 1



Explain how villi are adapted for efficient absorption of sugar molecules. (4)

Improvement Work: Explain how villi are adapted for efficient absorption of sugar molecules. (4)

WEEK 4 Questions (cover and quiz) - Bonding

Question	Answer
What kinds of elements usually form molecules?	Non-metals
What kinds of bonds are found in molecules?	Covalent
How strong are the forces of attraction **within** simple covalent molecules?	They are very strong.
How strong are the forces of attraction **between** simple covalent molecules?	They are relatively weak.
Are simple molecules usually good conductors of electricity at room temperature?	No, they are poor conductors of electricity.
What is the name for lots of monomers joined together to form large molecular chains?	Polymers
What simple molecule joins to form poly(ethene)?	Ethene
Why might simple molecules, such as methane, have low melting points?	Because they have weak intermolecular forces of attraction between them
What are monomers?	Small molecules that can be joined to make polymers
What is poly(ethene) made of?	Hydrogen and carbon or ethene monomers
What are polymers?	Many monomers joined together
In what types of bonds are pairs of electrons shared?	Covalent bonds
What is the monomer unit in poly(propene)?	Propene
Which has the higher melting point: poly(ethene) or the monomer it is made from?	Poly(ethene)
What are intermolecular forces?	Forces of attraction between molecules
Do simple molecules have strong intermolecular forces between them?	No. They are described as weak.
Why are simple molecules poor conductors of electricity?	There are no charge carriers.
What type of bonding is between the atoms in a molecule of water?	Covalent
What type of structure does water have?	Simple covalent molecule
What strength of forces are there between different molecules of water?	Weak
Does pure water conduct electricity?	No
What is a typical property of a metal?	High melting point, shiny when polished, malleable, high density, conducts electricity
What does the term malleable mean?	Can be hammered or bent into a different shape
What type of bonding involves sharing electrons?	Covalent
What kind of bonding and structure tends to be associated with low melting points and boiling points?	Covalent, simple molecular
Which kind of bonding and structure allows substances to conduct electricity when solid?	Metallic
Why does sodium chloride conduct electricity when molten but not when solid?	Ions are free to move when molten and the charged ions can carry the current.
Name a substance that has a very high melting point and is a non-conductor of electricity in any state.	Diamond
Why do lattice structures have high melting points?	Lots of energy is needed to break many strong bonds.
Why does sodium metal conduct electricity?	It contains freely moving delocalised electrons, and the charged electrons can carry the current.
Name two types of bonding model.	From: molecular formula; structural formula; dot and cross diagram; all shells; dot and cross diagram outer shell only; 3D ball and stick; 2D space-filling; or 3D space-filling (other answers are possible)
Name a type of bonding model that is used to show what happens to the electrons in a covalent bond.	A dot and cross model

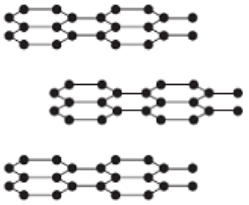
Date: 6th May 2024

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.

Diamond



Graphite

Use the diagrams above and your knowledge of structure and bonding to explain why graphite is very soft and diamond is very hard. (4)

Improvement Work: Use the diagrams above and your knowledge of structure and bonding to explain why graphite is very soft and diamond is very hard. (4)

WEEK 5 Questions (cover and quiz) - Energy

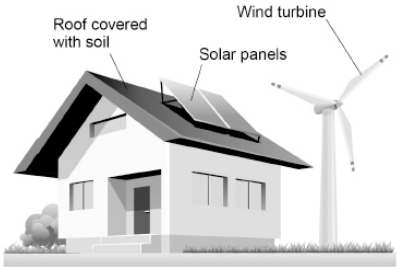
Question	Answer
What is the store of energy that is associated with temperature changes?	Thermal energy
What is the word equation for thermal energy?	change in thermal energy = mass x specific heat capacity x temperature change
What is the symbol equation for thermal energy?	$\Delta E = m\ c\ \Delta T$
What is the unit of specific heat capacity?	J/kg °C
What is the specific heat capacity of a substance?	It is the amount of energy required to raise the temperature of 1 kg of the substance by 1 °C.
What is the definition of power?	Power is defined as the rate at which energy is transferred or the rate at which work is done.
What is the word equation for power?	power = energy transferred ÷ time, power = work done ÷ time
What is the symbol equation for power?	P = E/ t P = W/ t
What is the unit of power?	Watts, W
What does 1 Watt mean in terms of Joules and seconds?	1 Joule of energy is transferred every second.
What is the most common way that energy is "wasted"?	Thermal energy / heating the surroundings
Give some examples of how to reduce unwanted energy transfers.	Thermal insulation, lubrication.
What does thermal conductivity mean?	The higher the thermal conductivity of a material the higher the rate of energy transfer by conduction across the material.
What factors affect the rate of cooling of a building?	The thickness and thermal conductivity of its walls.
What does the efficiency of an energy transfer tell us?	How much of the total input energy is transferred usefully
What is the word equation for efficiency?	efficiency = useful output energy transfer ÷ total input energy transfer x 100% OR efficiency = useful power output ÷ total power input x 100%
What is the definition of a renewable energy resource?	It is one that can be replaced as quickly as it is used.
What are some examples of renewable energy resources?	Biofuel, wind, hydro-electricity, geothermal, tidal, solar, wave
What is the definition of non-renewable energy?	It is one that cannot be replaced as it takes too long.
What are some examples of non-renewable energy resources?	Fossil fuels (coal, oil, natural gas), nuclear
What are some examples of uses of energy resources?	Transport, electricity generation, heating.
What does the word reliable mean?	Always available when you need it.
Why are some energy sources more reliable than others?	Some resources rely on the weather (solar/wind power) which may not always be favourable.
What environmental impact do some resources cause?	Burning fossil fuels and biofuel release CO_2 into the atmosphere which contributes to global warming.
Although we know that these environmental issues arise, why can we not always deal with them?	There may be political, social, ethical or economic considerations.

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.



Explain why it is a good idea for the eco-house to have both a wind turbine and solar panels. (2)

Improvement Work: Explain why it is a good idea for the eco-house to have both a wind turbine and solar panels. (2)

WEEK 6 Questions (cover and quiz) - Inheritance

Question	Answer
What are the two methods of reproducing?	Asexual reproduction and sexual reproduction.
How many parents are involved in asexual reproduction?	One.
Which type of reproduction produces genetically identical offspring?	Asexual reproduction.
Which type of cell division is involved in asexual reproduction?	Mitosis.
Which type of cell division produces gametes (sex cells)?	Meiosis.
Which type of reproduction involves gametes?	Sexual reproduction.
Which type of cell division produces genetically identical cells?	Mitosis.
Which type of cell division produces genetically different cells?	Meiosis.
What are the names of the male gametes in flowering plants and animals?	Pollen (plants), sperm (animals).
What are the names of the female gametes in flowering plants and animals?	Eggs.
How many sets of chromosomes are found in body cells?	Two sets of chromosomes.
How many sets of chromosomes are found in gametes?	One set of chromosomes.
Which type of cell division divides twice to form four cells?	Meiosis.
Which type of cell division divides once to form two cells?	Mitosis.
What type of cell division occurs as an embryo develops?	Mitosis.
What happens to the number of chromosomes when the gametes fuse?	The number of chromosomes is restored to the normal number (one set from the female gamete and one set from the male gamete).
What is a genome?	The entire genetic material of an organism.
What was the human genome project?	A study to identify the sequence of all the genes in a human.
Why was the human genome project important?	It helps us to search for genes linked to different types of diseases, understand and treat inherited disorders, and trace human migration patterns from the past.
What shape is a DNA molecule?	A double helix.
What is a gene?	A small section of DNA that codes for a sequence of amino acids to make a protein.
What is a chromosome?	A structure inside the nucleus of a cell that is made up of DNA.
What are chromosomes made of?	DNA (deoxyribonucleic acid).

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.

Scientists working on the ‘Human Genome Project’ have now mapped the entire genetic code of humans. Explain one way this could be important for people in the future. (2)

Improvement Work: Scientists working on the ‘Human Genome Project’ have now mapped the entire genetic code of humans. Explain one way this could be important for people in the future. (2)

WEEK 7 Questions - Atoms and The Periodic Table

Question	Answer
Define the term inert.	Unreactive
Explain why the noble gases are inert.	They have full outer shells, so do not need to gain or lose electrons
What is a trend?	A pattern in properties
State the trend in the melting points of the alkali metals.	Melting point reduces further down the group
Write a name for this chemical equation LiOH	Lithium hydroxide
Write a name for this chemical equation KOH	Potassium hydroxide
Define a displacement reaction?	A reaction in which a more reactive element takes the place of a less reactive element in a compound
Explain why fluorine is more reactive than chlorine.	Fewer shells/electrons, less shielding (or stronger attraction from nucleus), easier to gain electrons
Explain why potassium is more reactive than lithium.	More shells/electrons, less shielding (or weaker attraction from nucleus), easier to lose electrons
Explain why bromine is less reactive than chlorine.	More shells/electrons, more shielding (or weaker attraction from nucleus), harder to gain electrons
Explain why sodium is less reactive than caesium	Fewer shells/electrons, less shielding (or stronger attraction from nucleus), harder to lose electrons
What did Chadwick discover?	The neutron
What elements are in sodium fluoride?	Sodium and fluorine
What elements are in potassium nitrate?	Potassium nitrogen and oxygen
Write down the charge of a lithium ion.	+1
Write down the charge of a chlorine ion.	-1
What are two isotopes of the same element?	Atoms of the same element with different numbers of neutrons
The number of _____ and _____ are the same in atoms of different isotopes.	Protons and electrons
Who in 1914 revised the model of the atom suggesting electrons are in certain energy levels	Bohr
Who discovered the electron?	Thomson
Who suggested atoms behaved as if they were tiny, hard spheres?	Dalton
Describe the structure of the transition metals.	Lattice of positive ions surrounded by delocalised electrons.
State the properties of the transition metals.	Hard, shiny, conduct heat and electricity, ductile
What is an alloy?	A metal mixed with other metals or elements
Why are alloys often used?	Atoms of other elements change the structure of metals, giving them more useful properties (e.g. harder, stronger).

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.

Explain why caesium is more reactive than sodium. You should answer in terms of electrons. (4)

Improvement Work: Explain why caesium is more reactive than sodium. You should answer in terms of electrons. (4)

WEEK 8 Cover and quiz

Use your blue mock sheet for your retrieval practice this week.

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.

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)

WEEK 9 Cover and quiz

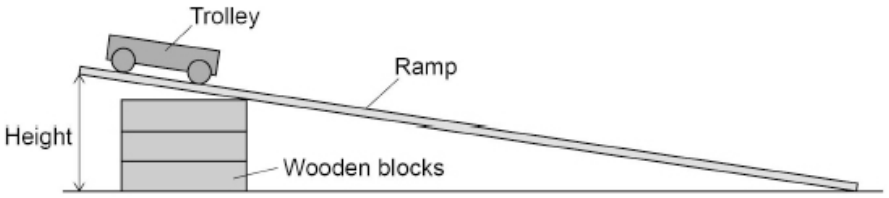
Use your blue mock sheet for your retrieval practice this week.

Date: 17th June 2024

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

Date: 17th June 2024

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.



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)

WEEK 10 Cover and quiz

Use your blue mock sheet for your retrieval practice this week.

Date: 24th June 2024

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

Date: 24th June 2024

Week 10 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 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)

WEEK 11 Questions (cover and quiz) - Inheritance

Question	Answer
What are different forms of the same genes called?	Alleles.
Which type of allele is expressed in the phenotype even if only one version of it is present?	Dominant
Which type of allele needs two versions to be present for it to be expressed in the phenotype?	Recessive
What keyword describes an individual with two identical alleles for a characteristic?	Homozygous
What keyword describes an individual with two different alleles for a characteristic?	Heterozygous
Define the keyword genotype.	All the alleles present in an individual.
What is the phenotype of an individual?	The physical appearance of an individual.
How many **pairs** of chromosomes are found in normal human body cells?	23
What are the sex chromosomes for male and female mammals?	XX- female, XY - male.
Give an example of a disease caused by a dominant allele?	Polydactyly (having extra fingers and/or toes).
Give an example of a disease caused by a recessive allele?	Cystic fibrosis.
What does it mean if someone is a carrier for a genetic disorder?	They are able to pass the recessive gene to their offspring but do not suffer the disease themselves.
Why are there no carriers for genetic disorders caused by dominant alleles?	A person who is heterozygous for a genetic disease caused by a dominant allele will suffer the disease themselves and so will be a sufferer not a carrier.
What is embryo screening?	Testing to see if an embryo (or foetus) carries any alleles that cause genetic disorders.
What keyword describes 'the differences in characteristics in a population'?	Variation.
What causes variation?	Variation is caused by genes, the environment and a combination of both genes and the environment.
What is the theory of evolution?	All species of living things have evolved from simple life forms that developed over 3 billion years ago.
What causes genetic variation?	Mutations.
What is a mutation?	A change in the DNA code.
Is it common for mutation to lead to a new phenotype?	No, most mutations have no effect on the phenotype, some influence phenotype, very few determine phenotype.
Describe the theory of evolution by natural selection.	Individuals within a population have a range of phenotypes and genetic variation, individuals with characteristics most suited to the environment are more likely to survive and breed successfully, the alleles that enable the individual to survive are then passed on to the next generation.
What is a fossil?	Fossils are the remains of organisms from millions of years ago that can be found in rocks, ice and other places.
How are fossils formed?	They can be formed by the absence of decay (fossils in ice), the replacement of parts by minerals as they decay (fossils in rocks) or preserved traces of organisms (fossilised footprints).
Why is the fossil record incomplete?	Many early forms of life were soft-bodied, which means

	that they have left few traces behind. What traces there were have been mainly destroyed by geological activity.
Why are scientists uncertain about how life on Earth began?	There is a lack of evidence because there are gaps in the fossil record.
What information do scientists get from fossils?	How much or how little different organisms have changed as life developed on Earth.
What are the main causes of extinction?	A change in the environment the organism is living in.
What does the keyword extinction mean?	There are no remaining individuals of a species still alive.
What changes in the environment can cause extinction?	Change in temperature, new predators, new diseases, better competitors, long term geological changes to the environment, single catastrophic events (e.g. volcanic activity).

Date: 1st July 2024

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

Date: 1st July 2024

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.

Moose have distinct characteristics such as antlers. Describe how moose may have evolved to have large antlers. (5)

Improvement Work: Moose have distinct characteristics such as antlers. Describe how moose may have evolved to have large antlers. (5)

WEEK 12 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 sulfate 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

Date: 8th July 2024

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

Date: 8th July 2024

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.

A student plans a method to prepare pure crystals of copper sulfate.
The student's method is:

1. Add one spatula of calcium carbonate to dilute hydrochloric acid in a beaker.
2. When the fizzing stops, heat the solution with a Bunsen burner until all the liquid is gone.

The method contains several errors and does not produce copper sulfate crystals. Explain the improvements the student should make to the method so that pure crystals of copper sulfate are produced. (6)

Improvement Work: Explain the improvements the student should make to the method so that pure crystals of copper sulphate are produced. (6)

WEEK 13 Questions - Working Scientifically

Question	Answer
What is the definition of resolution?	The smallest measurement that can be made with a measuring device.
What is the definition of range?	Difference between the largest value and the smallest value.
What is the resolution of an ordinary 15 or 30 cm ruler?	1mm
What is the definition of a systematic error?	Difference between measurement and actual value that is the same each time.
What is a zero error?	An error caused by the reading not being zero when no measurement is being made.
What is the definition of precise?	Repeated measurements are close together (small random errors)
Why does doing repeats and taking a mean improve the accuracy of a measurement?	Reduces the effect of random error
What is the definition of reliable?	Anyone could get the same experimental result again
What is the definition of repeatable?	If same person did same experiment again, they would get the same results
Which of the following gives the best definition of reproducible?	If someone else did the same experiment, they would get same results
Why might a scientist's conclusion not be valid?	Hasn't kept control variables constant; confused correlation with causation; other factors involved.
What is the definition of accurate?	How close the measurement is to the actual value.
What is the definition of resolution?	The smallest measurement that can be made with a measuring device.
Which number is represented by the prefix centi?	0.01
Which number is represented by the prefix kilo?	1,000
Which number is represented by the prefix Giga?	1,000,000,000
What prefix do we use to represent (1/1000 or 0.001)?	milli
What prefix do we use to represent (1/1,000,000,000 or 0.000000001)?	nano
What does the gradient tell us about a graph?	How steep the line is
What is the gradient of a horizontal section of a graph?	Zero
How do we find the y intercept of a graph?	Find the point at which the line crosses the vertical (y) axis.
What is the rule for calculating the area of a trapezium?	½ (a+b) x h
What does the graph of a directly proportional relationship look like?	Straight line through the origin
What does the graph of an inversely proportional relationship look like?	Downwards sloping curve, never touches either axis

Date: 15th July 2024

Week 13 Task 1 - 1 Page of retrieval quizzing - do not use full sentences

Date: 15th July 2024

Week 13 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.

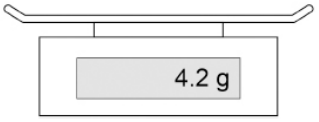


Figure 1 shows the balance before anything was added. What type of error is shown on the balance and how could the student get a correct value for the mass of the cube from the balance? (2)

Improvement Work: What type of error is shown on the balance and how could the student get a correct value for the mass of the cube from the balance? (2)

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