

Aylsham High School Y7 Outcomes

Biology

B1 Cells and Body Systems

- Define cell
- Identify cell organelles
- Describe the structural adaptations of some unicellular organisms
- State what cell organelles are found in animal and plant cells; identify the similarities and differences between plant and animal cells
- Describe the function of cell organelles
- Explain what standard form is and how it is used for very large and very small objects.
- Convert between standard form and normal numbers
- Describe how to prepare a microscope slide
- Measure the size of a cell or cell organelle under a microscope
- Calculate total magnification of microscope
- Demonstrate an understanding of number, size and scale including ability to estimate sizes of microscopic and larger objects
- Describe the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms.
- Describe organs found in the digestive system
- Describe the functions of organs found in the digestive system
- Recall that enzymes are proteins
- State the functions of enzymes
- Describe how food is digested in the digestive system

B2 Respiration

- Describe organs found in the respiratory system
- Describe the mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases, including simple measurements of lung volume
- Describe the function of the alveoli
- Explain how alveoli are adapted to their function
- State the organs found in the circulatory system
- State the components of blood and their function (plasma, platelets, red and white blood cells)
- Explain how blood vessels (capillaries, veins and arteries) are adapted to their function
- Describe what is meant by diffusion
- Investigate the effect of surface area on the rate of diffusion

B3 Genetics

- Describe what puberty is (changes from child to an adult who can produce offspring)
- Describe characteristics of puberty in males and females
- Describe the structure and function of male and female reproductive organs
- Describe what happens in a menstrual cycle (in terms of uterus lining, and its purpose)
- Describe what happens during reproduction in animals
- Define gamete and zygote
- Identify cell organelles and describe their function
- Define cell, nucleus, chromosome and DNA
- Describe the order of scale in terms of relationships between cell, nucleus, chromosome and DNA
- Describe the structure of DNA (as 2 strands coiled up to form a double helix; with complimentary base pairs ATGC that are held together by hydrogen bonds)
- Describe the uses of contraception and name some examples of contraception
- Describe what happens during pregnancy and birth; describe the effect of maternal lifestyle on the foetus through the placenta
- Describe the use of, and use percentile charts to monitor growth
- Describe what a hormone is
- Describe the function of a hormone
- State some examples of hormones including oestrogen and testosterone and their role in puberty

B4 Ecosystems

- Define abiotic and biotic factors
- Define biodiversity, organisms, populations, communities and ecosystems.
- Describe the effects of different abiotic and biotic factors on biodiversity and types of animals that live in given environments
- Describe the process of photosynthesis
- Recall the equation for photosynthesis
- Describe how photosynthesis transfers light energy into stored chemical energy (in a plant)
- Describe how chemical energy in plants is transferred into other organisms
- Investigate the relationship between abiotic/biotic factors and organisms found in an environment using quadrats and belt transects
- Use a pitfall trap to investigate the relationship between abiotic/biotic factors and organisms in an environment
- Describe the dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere
- Describe how energy is transferred in a food web
- Describe the interdependence of organisms in an ecosystem, including food webs and insect pollinated crops
- Describe the impact of increase/decrease of populations on organisms in a food web
- Identify predators and prey in a food web
- Describe predator/prey relationships and the impact of changing

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Chemistry

C1 Atoms and the Periodic Table

- Definition of an atom**
- Compare Dalton's and Bohr's model of the atom in basic terms, Dalton's is a simple sphere and Bohr's model contains 3 subatomic particles
- State the 3 subatomic particles, their charges, masses and location
- Explain why an atom is neutrally charged overall
- Definition of an element**
- Appropriate use of capital letters and lower-case letters when writing symbols and formulae**
- Recall the symbols for the first 20 elements on the periodic table**
- Define Mixture
- Definition of a compound**
- Identify the number of atoms in compounds
- Identify the number of atoms in complex compounds which have brackets in the formulae
- Use particle diagrams to represent compounds/mixtures/elements/atoms
- Investigate what is meant by elements, mixtures and compounds by looking at the properties (and ability to separate where applicable) iron, sulphur, iron and sulphur mixture and iron sulphide
- State what is meant by diatomic molecule
- Recall formula for common compounds including water, carbon dioxide, hydrogen, oxygen, nitrogen, chlorine, carbon monoxide**
- Identify and apply prefixes and suffixes used in compounds such as mono/di/tri and sulphate/carbonate or ide/ate
- Describe the difference between pure and impure substances (pure being elements or the same type of compound in a substance e.g., pure water; and impure being a mixture e.g., salt water)**
- Investigate the effect of pure and impure substances on the melting points of pure frozen water and impure water
- Draw a graph for the heating/cooling of the pure and impure substances
- Use the analysis from the investigation to explain why councils salt roads in winter
- Identify reactants and products in reactions
- Write word equations for given reactions

C2 The Particle Theory

- Describe the Dalton model of the atom
- Describe and investigate the arrangement, movements, density and energy of particles in solids, liquids and gases**
- Draw particle diagrams of solids, liquids and gases**
- Describe Brownian motion in gases**
- Describe how diffusion only occurs in liquids and gases, where forces of attraction between particles are weak enough to allow particles to flow, and that it occurs from low concentration to high concentration**

C3 Chemical Reactions

- State the test for hydrogen, carbon dioxide and oxygen
- Safely light a Bunsen burner
- Identify hazard symbols, describe risks and suggest managements to the risks
- Recall common acids and alkalis and their formulae (hydrochloric acid, sulphuric acid, nitric acid, sodium hydroxide)
- Recall the pH of strong acids, weak acids, strong alkalis, weak alkalis and neutral substances**
- Recall the effects of acids and alkalis with universal indicator, litmus and phenolphthalein**
- Investigate the pH of household and laboratory solutions
- Create indicators using organic materials such as red cabbage or geranium leaves
- State the word equation for a neutralisation reaction**
- Predict what will happen when an acid reacts with an alkali on a graph (y axis pH, x axis volume of NaOH added to HCl)
- Carry out a neutralisation reaction between HCl and NaOH**
- Using particle diagrams, explain the graph for the neutralisation of HCl with NaOH
- Define soluble, insoluble, solute, solvent and solution**
- *Investigate the effect of temperature on the solubility of water
- State the law of conservation of mass
- Investigate the law of mass conservation (residue in containers/loss of mass by gases/loss in evaporation or filtration/other chemical reactions taking place)
- Suggest reasons why we find that our results may not reflect law of mass conservation

C4 Earth Sciences

- State the composition and structure of the Earth**
- State the components of the Earth's atmosphere**
- Investigate the % of oxygen in air by burning iron wool**
- Use particle diagrams of oxygen, nitrogen, carbon dioxide, methane and water to review definitions of elements, compounds and mixtures; as well as formulae of elements & compounds;
- State the word equation for complete and incomplete combustion**
- Describe the tests for the products of complete combustion
- Describe the advantages and disadvantages of burning fossil fuels
- State the dangers of incomplete combustion, describe why CO is a danger

C5 Metals

- Describe characteristics of metals**
- Describe what makes a material a good conductor of electricity (free charged particles such as electrons)**
- Explain where metals come from
- State what is meant by an ore
- State what is meant by a native metal and how they are found/extracted from the ground
- Investigate and identify the reactivity of metals (Mg, Zn, Fe, Sn and Cu) by reacting them with oxygen and water**
- Write word equations to represent reactions taken place
- Suggest a reactivity series of metals investigated
- State the general word equation for a metal oxide reacting with an acid; apply to different metal oxides
- Suggest the names of salts produced from the reaction of a metal oxide and acid
- Investigate the acidity of metal oxide solutions and non-metal oxide solutions using litmus**
- State the metal oxide solutions are alkaline and non-metal oxide solutions are acidic**
- Use the periodic table to predict whether the element oxide would produce an acidic or alkaline solution**

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Physics

P1 Forces	P2 Motion	P3 Energy	P4 Waves	P5 Electricity and Magnetism	P6 Astronomy
<input type="checkbox"/> Define and give examples of scalar and vector quantities <input type="checkbox"/> Recall speed equation <input type="checkbox"/> Calculate speed, distance and time <input type="checkbox"/> Recall common speeds	<input type="checkbox"/> Unit of force is Newtons (N) <input type="checkbox"/> Describe how forces are generated from the interaction between two objects, they can be simply seen as pushes and pulls <input type="checkbox"/> Investigate balanced and unbalanced forces and describe how it is measured <input type="checkbox"/> Use free body diagrams to represent balanced and unbalanced forces <input type="checkbox"/> Define resultant force <input type="checkbox"/> Calculate the resultant force acting on objects <input type="checkbox"/> Describe and investigate how the size of a resultant force causes motion depending on its size and direction <input type="checkbox"/> Describe and investigate how objects can interact at a distance without contact, specifically magnetic fields, gravity and electrostatic charges	<input type="checkbox"/> Recall the unit for energy <input type="checkbox"/> Name 9 forms of energy <input type="checkbox"/> Identify stored and forms of energy in situations and devices <input type="checkbox"/> Describe what is meant by a system <input type="checkbox"/> Explain what is meant by conservation of energy <input type="checkbox"/> Explain that there are energy transfers in a closed system, but no net change to the total energy in the system <input type="checkbox"/> Draw and interpret energy transfer diagrams <input type="checkbox"/> Describe the energy transfer in a microphone, an object speeding up or slowing down, dropping an object, completing an electrical circuit, stretching a spring, metabolism of food, burning fuels. <input type="checkbox"/> Use conservation of energy to calculate energy changes in a system <input type="checkbox"/> State 2 common forms of waste energies <input type="checkbox"/> Describe how energy is dissipated and stored in less useful ways	<input type="checkbox"/> Define terms frequency, amplitude and wavelength and recall their units <input type="checkbox"/> Compare differences of simple transverse wave diagrams of frequency, amplitude and wavelength <input type="checkbox"/> State examples of longitudinal and transverse waves (just to know sound is longitudinal and light and water waves are transverse) <input type="checkbox"/> Describe longitudinal waves and transverse waves <input type="checkbox"/> Draw a suitable diagram to illustrate water waves as transverse waves <input type="checkbox"/> Describe and investigate how that water waves can be reflected <input type="checkbox"/> Describe, and investigate, how water waves would add together to form a higher amplitude or cancel when a peak and trough interact <input type="checkbox"/> Investigate (this would have to be a demo) the super positioning of water waves in a ripple tank <input type="checkbox"/> Describe how sound transfers energy from an object producing vibrations <input type="checkbox"/> Describe how sound waves are transmitted (and affected by) in the three states of matter <input type="checkbox"/> Describe, and explain, how sound waves reflect differently off of different materials <input type="checkbox"/> Describe how sound waves reflect off of surfaces and these are known as echoes <input type="checkbox"/> State the speed of light and sound <input type="checkbox"/> State that light can travel through all 3 states of matter (transparent/translucent solids) and a vacuum	<input type="checkbox"/> Describe the structure of an atom including three subatomic particles, their charge and mass <input type="checkbox"/> Describe the structure of metals (positively charged "ions"/positive charges with free electrons) <input type="checkbox"/> Describe how static electricity is generated (the rubbing of insulators to transfer electrons from one object to another, resulting in positive and negatively charged objects) <input type="checkbox"/> Describe how oppositely charged objects interact <input type="checkbox"/> Investigate how to generate static electricity and how like/unlike charged objects interact <input type="checkbox"/> Identify common electric circuit symbols including cell, battery, power supply/pack, switch, bulb, ammeter, voltmeter, resistors and variable resistors <input type="checkbox"/> Explain the function of the above-mentioned components <input type="checkbox"/> Identify series and parallel circuits, describe series and parallel circuits <input type="checkbox"/> Describe how to place an ammeter in a circuit <input type="checkbox"/> State unit of current <input type="checkbox"/> Define current <input type="checkbox"/> Investigate and describe what happens to current in a series and parallel circuit <input type="checkbox"/> Describe what is meant by potential difference/voltage <input type="checkbox"/> State unit of potential difference <input type="checkbox"/> Describe how to place an ammeter and voltmeter in a circuit <input type="checkbox"/> Recall interaction between like and unlike magnetic poles <input type="checkbox"/> Recall three magnetic metals and that not all metals are magnetic <input type="checkbox"/> Describe the shape and direction of magnetic fields around bar magnets, including the interaction of like and unlike poles <input type="checkbox"/> Use plotting compasses to show shape and direction of magnetic field <input type="checkbox"/> Describe Earth's magnetic field, and its application to the use of compasses in navigation	<input type="checkbox"/> State the sun is a star <input type="checkbox"/> Define terms solar system, galaxy and universe <input type="checkbox"/> Describe what causes seasons <input type="checkbox"/> Compare the sizes of a solar system, galaxy and universe, use standard form when comparing sizes <input type="checkbox"/> Investigate the scale of the celestial objects in our solar system to help understand the distances between the sun and its orbiting planets. Use standard form when describing distances of planets from the sun. <input type="checkbox"/> Define weight and mass <input type="checkbox"/> Recall the equation for weight <input type="checkbox"/> Calculate weight, mass or gravitational field strength <input type="checkbox"/> Investigate what happens to your mass and weight if you were to visit each planet in the solar system