Wesgreen International School | Inspiring Excellence, Empowering Global Minds

Programme of Study – Year 8 Science 2023-24

TERM 1

	Theme	Overview of key learning to take place	How learning will be assessed
	Topic:1 8A – Food and Nutrition	I can recall the nutrients we need in our diet. I can interpret nutrition information labels. I can recall tests used to identify some substances. I can recall good sources of different nutrients. I can describe how factors change the amount of energy we need. I can describe what each nutrient does to the body. I can describe benefits of balanced diet. I can explain the causes and effects of some different types of malnutrition. I can describe how different foods are invented. I can recall parts of the digestive system. I can explain why enzymes and bacteria are useful for digestion. I can calculate areas of rectangles and cuboids. I can explain the importance of surface area in the science, including surface area : volume ratios. I can explain how diffusion enables absorption by the small intestine. I can explain how the small intestine is adapted to its function.	**Formative Assessment to be used this term:** • In class peer and self-assessment of extended answer questions • End of topic questions- exam style worksheets

	Topic:2 8E – Combustion	I can describe combustion of reactions of hydrogen and hydrocarbon. I can describe tests for hydrogen, carbon dioxide and water. I can describe oxidation reactions of metals and non-metals. I can explain changes in mass seen in oxidation reactions. I can compare how phlogiston and oxygen explain combustion. I can use the fire triangle to explain how to control a fire. I can identify hazard symbols for substances likely to cause fire. I can identify control variables in an experiment and describe how to control them. I can describe pollutants that are formed by burning fuels. I can explain how these pollutants cause problems and how their effects can be reduced. I can describe the greenhouse effect and how it is caused. I can explain how human activity may be causing global warming. I can explain how we can reduce carbon footprint. I can explain how the pollution from the cars be reduced.	
	Topic:3 8I – Fluids	I can describe properties of different states of matter. I can explain properties in terms of the particle model. I can explain why materials expand and contract when the temperature changes.	**Summative assessment** **Mid-term assessment**: after first 2 topics of the term. **End of term assessment**: after next 2 topics of the term.

		I can state what is meant by density and recall its units. I can describe how to measure the volume of irregular objects. I can use the formula relating to mass, volume and density. I can recall that a substance does not change temperature while it is in changing state. I can describe what happens to particles during changes of state. I can describe the ways in which water and ice are different from other liquids and solids. I can describe how gas pressure can be increases. I can explain some effects of pressure in different situations using the particle model. I can explain some effects of pressure in different situations using particle model. I can state what is meant by upthrust. I can explain why some objects float. I can recall the factors that affect the amount of upthrust. I can use ideas about the density in my explanation. I can describe ways in which drag forces can be increases or reduced. I can describe the causes of drag forces. I can describe how drag changes with speed. I can describe the skills need to operate aeroplanes.	

	Topic 4 8B – Plants and their Reproduction	I can interpret scientific organisms names. I can describe how organisms are classified. I can explain the importance of biodiversity. I can collect samples to calculate estimates. I can use accuracy and time taken as criteria for evaluation. I can recall the differences between sexual and asexual reproduction. I can recall examples of asexual reproduction in plants. I can explain characteristics of offsprings produced by sexual and asexual reproduction. I can explain how the structures of flowers and pollen allow pollination by animals and wind. I can explain how plants ensure cross-pollination. I can explain how the quality of air is checked. I can describe how pollination leads to fertilisation. I can describe the formation of seeds and fruits. I can explain the functions of seeds and fruits. I can describe what happens in germination. I can explain why seeds and plants need certain resources. I can describe how organisms are interdependent. I can explain how animals use plants.	

TERM 2

	Theme	Overview of key learning to take place	How learning will be assessed
	Topic 5 8F – Periodic Table	I can describe Dalton's atomic theory. I can describe elements using physical properties. I can write and identify the chemical symbols for elements. I can explain the difference between physical and chemical changes and properties. I can use atomic theory to explain what happens during the chemical reactions. I can write and interpret chemical formulae. I can use the periodic table to find the elements with similar properties. I can describe some typical properties of alkali metals, halogens and noble gases. I can describe how modern periodic table is arranged. I can explain what is meant by an anomalous result (outlier). I can identify anomalous results and the range of readings in data. I can suggest reasons for anomalous results/outliers/random errors. I can explain melting, freezing and boiling points and use them to predict the state of a substance. I can describe and identify trends in physical properties within the periodic table. I can identify metals and non-metals by their properties and position in their periodic table.	**Formative Assessment to be used this term:** • In class peer and self-assessment of extended answer questions • End of topic questions- exam style worksheets

		I can describe the reactions of some elements with water and oxygen. I can identify trends and make predictions about chemical properties using the periodic table.	
	Topic 6 8J – Light	I can compare light and sound waves. I can describe what happens to light when it hits different surfaces. I can describe how to demonstrate that light travels in straight lines. I can explain why agreed conventions are used in ray diagrams. I can use the correct names for rays reaching and leaving a mirror and the angles between them and the normal. I can use ray tracing to investigate mirrors. I can describe how mirrors and rough surfaces reflect light. I can describe how an image is formed in a mirror using ray diagram. I can recall some uses of lenses. I can describe how light changes direction at the interface of two different substances. I can use a model to explain how lenses work. I can recall the parts of camera and eyes and state their functions. I can describe some ways in which energy transferred by light leads to chemical or electrical effects. I can describe how ophthalmologists work. I can describe how to make a spectrum.	

		I can explain why colored objects appear colored.	
	Topic 7 8C – Breathing and respiration	I can recall what happens in aerobic respiration. I can recall functions of the organs in the gas exchange system. I can explain how structure of the lungs allows efficient gas exchange. I can recall why means and ranges are used. I can calculate means and ranges. I can describe effects of exercise on breathing and heartbeat rates. I can describe how substances reach respiring cells from the blood and how waste products are returned to the blood. I can describe the causes an explain the effects of reduced oxygen supply on the blood. I can explain how data can be sued to identify the cause of a disease. I can recall how to detect aerobic respiration. I can describe how gas exchange occurs in different organisms. I can recall what happens in aerobic respiration. I can describe the effects of anaerobic respiration during and after hard exercise.	
		I can describe some common properties and uses of metals. I can write word equations for the reactions of metals and non-metals. I can describe what a catalyst is and some uses of catalyst.	 **Summative assessment**

	<u>Topic 8</u> 8G – Metals and their uses	I can describe what happens during corrosion and rusting. I can explain how metals can be protected from corrosion. I can describe, draw and recognize arrangement of particles. I can identify products and reactants using symbol equation. I can describe the reactions of metals with water. I can place metals in order of their reactivity. I can write word and symbol equations for reactions. I can explain what is meant by accurate data. I can identify data that is not or is not reliable, repeatable or reproducible. I can explain how to improve the quality of data collected during an investigation. I can describe the reactions of metals with acids. I can place metals in order of reactivity. I can write word and symbol equations for reactions. I can explain what alloys are and why they are used. I can use models to explain the properties of alloys. I can identify pure substances by their melting points and boiling points. I can explain how scientists discover new alloys.	**Mid-term assessment**: after first 2 topics of the term. **End of term assessment**: after next 2 topics of the term.

TERM 3

	Theme	Overview of key learning to take place	How learning will be assessed
	Topic 9 7K – Energy Transfers	I can explain how internal energy and temperature are different. I can identify direction in which energy will be transferred. I can explain what happens to the particles when a liquid evaporates. I can describe how energy is transferred by radiation, conduction and convection. I can use particle model to explain energy transfers in matter. I can recall ways of reducing energy transfer. I can state the meaning of accuracy and precision. I can explain how to avoid random and systematic errors. I can describe what power and efficiency mean. I can calculate efficiencies. I can interpret Sankey diagrams. I can explain how people can help those affected by disasater. I can explain how power companies charge for the energy used. I can describe what a payback time tells. I can work out payback times.	 **Formative Assessment to be used this term:** • In class peer and self-assessment of extended answer questions • End of topic questions- exam style worksheets

		I can explain how energy usage affects the planet.	
	Topic 10 8D – Unicellular Organisms	I can use cell features to identify members of different kingdoms. I can explain differences between members of unicellular and multicellular organisms. I can explain how microbiologists help in treatment and prevention of diseases. I can describe the ways in which yeast respires. I can explain the use of yeast in baking. I can describe how yeast reproduce and the factors that limit this. I can identify causes of environmental variation. I can explain why anaerobic bacteria are used to make yogurt and cheese. I can describe the functions of the parts of a bacterial cell. I can describe how a bacteria reproduces. I can use a statement key. I can interpret and draw pie charts. I can describe the functions of the common parts Protista cells. I can describe how algae makes their own food and explain the importance of this. I can explain the importance of decomposers. I can model the recycling of carbon in an ecosystem using the carbon cycle.	

	<u>Topic 11</u> 8H – Rocks	I can describe the texture of some different rocks. I can explain how some of the properties of rocks are related to their use. I can recall some uses of rocks. I can describe the structure of the Earth. I can describe how igneous and metamorphic rocks are formed. I can explain how grain size is evidence for the speed of cooling. I can identify metals and non-metals by their properties. I can explain how volcanic eruptions be predicted. I can describe the reaction between metal carbonates and acids. I can describe how weathering can break rocks. I can describe how weathered rocks are eroded. I can describe how sedimentary rocks are formed. I can describe the texture of some sedimentary rocks. I can use the rock cycle model to link three types of rocks. I can describe how scientific method is used by geologists. I can use a hypothesis to make a prediction. I can explain how evidence disproves a certain theory. I can describe how metals are obtained.	

		I can describe some advantages of recycling materials.	
	<u>Topic 12</u> 8L – Earth and Space	I can describe some ways of investigating planets. I can compare different models of solar system. I can describe what astronauts do in space. I can use the Earth's axis tilt to explain the changes in the seasons. I can use a model to explain the pattern of light and dark at the Earth's poles. I can explain how to arrange magnets so they attract or repel each other. I can describe Earth's magnetic field and how it affects compasses. I can describe how to find shape of the magnetic field. I can calculate weight. I can recall the factors that affect the strength of gravity. I can describe how gravity affects objects in space. I can calculate ratios and percentages. I can convert fractions to decimals. I can express one number as a percentage of another. I can describe stars, galaxies, constellations. I can describe the Milky Way galaxy. I can explain what a light year is.	**Summative assessment** **Mid-term assessment**: after first 2 topics of the term. **End of term assessment**: after next 2 topics of the term.