Year 8 Science Learning Outcomes

Biology Unit 2a: Health

- Describe the components of a healthy diet.
- Explain the role of each nutrient in the body.
- Describe how to test foods for starch, lipids, sugar, and protein.
- Describe the positive result for each food test.
- Describe some health issues caused by an unhealthy diet.
- Calculate the energy requirements of different people.
- Describe the structure and function of the main parts of the digestive system.
- Describe the process of digestion
- Describe the role of enzymes in digestion
- Describe the role of bacteria in digestion.
- Describe the difference between recreational and medicinal drugs.
- Describe the effects of drugs on health and behaviour.
- Describe the effect of alcohol on health and behaviour.
- Describe the effect alcohol has on conception and pregnancy.
- Describe the effects of tobacco smoke on health.
- Describe the effects of tobacco smoke on pregnancy.

Biology Unit 2b: Biological Processes

- Describe the process of photosynthesis.
- State the word equation for photosynthesis.
- Describe the structure and function of the main components of a leaf.
- Explain the distribution of the chloroplasts in a leaf.
- Describe how a plant uses minerals for healthy growth.
- Describe where chemosynthesis takes place.
- Describe the process of chemosynthesis.
- State the word equation for aerobic respiration.
- Describe the process of respiration.
- State the word equation for anaerobic respiration.
- Describe the differences between aerobic and anaerobic respiration.

Biology Unit 2c: Ecosystems and Adaptations

- Describe what food chains show.
- Describe what food webs show
- Describe the interdependence of organisms.
- Describe how toxic materials can accumulate in a food web.

- Describe how different organisms co-exist within an ecosystem.
- Describe some resources that plants and animals compete for.
- Describe how organisms are adapted to their environments.
- Describe how organisms adapt to environmental changes.
- Describe how competition can lead to adaptation.

Biology Unit 2d: Inheritance

- Describe how variation in species occurs.
- Describe the difference between environmental and inherited variation
- Describe the difference between continuous and discontinuous variation.
- Describe how characteristics are inherited.
- Describe how scientists worked together to develop the DNA model.
- Describe the process of natural selection.
- Describe how organisms evolve over time.
- Describe some factors that may lead to extinction.
- Describe the purpose of gene banks.

Physics Unit 2b: Energy

- Compare the energy values of food and fuels.
- Compare the energy in food and fuels with the energy needed for different activities.
- Describe energy before and after a change
- Explain what brings about transfers in energy.
- State the difference between energy and temperature.
- Describe what happens when you heat up solids, liquids, and gases
- Describe how energy is transferred by particles in conduction and convection.
- Describe how an insulator can reduce energy transfer.
- Describe some sources of infrared radiation.
- Explain how energy is transferred by radiation.
- Describe the difference between a renewable and a non-renewable energy resource.
- Describe how electricity is generated in a power station.
- Explain the difference between energy and power
- Describe the link between power, fuel use, and cost of using domestic appliances.
- Calculate work done.
- Apply the conservation of energy to simple machines.

Physics Unit 2b: Motion

- Calculate speed using the speed equation.
- Interpret distance–time graphs.
- Calculate speed from a distance time graph.
- Describe the factors that affect gas pressure.
- Describe how atmospheric pressure changes with height.
- Describe how liquid pressure changes with depth.
- Explain why some things float and some things sink, using force diagrams.
- Calculate pressure.
- Predict quantitatively the effect of changing area and/or force on pressure.

- Describe what is meant by a ‘moments’.
- Calculate the moment of a force.

Chemistry Unit 2a: The Periodic Table

- Explain how elements are classified as metals and non-metals.
- Use patterns to classify an element as a metal or non-metal
- Use patterns to predict properties of elements.
- Compare patterns in properties in the groups and periods of the Periodic Table.
- Record observations about how Group 1 metals react with water, and the pH of the solution formed.
- Use patterns to predict properties of Group 7 elements.
- Describe displacement reactions.
- Describe the physical and chemical properties of the Group 0 elements.

Chemistry Unit 2b: Separation

- Describe particle arrangements in mixtures.
- Explain how to identify pure substances.
- Select appropriate separation techniques for different mixtures
- Describe solutions using key words.
- Use the particle model to explain dissolving.
- Explain what a saturated solution is
- Explain the meaning of solubility.
- Explain how filtration works.
- Describe how to filter a mixture.
- Explain how to use evaporation to separate mixtures.
- Explain how distillation works.
- Explain how chromatography separates mixtures
- Analyse chromatograms to identify substances in mixtures.

Chemistry Unit 2c: Metals

- Compare the reactions of different metals with dilute acids.
- Explain the test for hydrogen gas.
- Decide which metals react more vigorously from practical observations.
- Compare the reactions of different metals with oxygen
- Rank metals in order of how vigorously they react with oxygen.
- Compare the reactions of metals with water.
- Use the reactivity series to predict reactions.
- Predict if a given pair of substances will undergo displacement.
- Use the reactivity series to explain displacement reactions.
- Use the reactivity series to decide which metals can be extracted from their ores by heating with carbon.
- Explain ceramic properties.
- Explain why properties of ceramics make them suitable for their uses.
- Describe polymer properties.
- Explain how polymer properties make them suitable for their uses

- Describe composite properties.
- Explain why composite properties make them suitable for their uses.

Chemistry Unit 2d: Earth

- Describe properties of the different layers of the Earth's structure
- Describe the composition of the atmosphere
- Describe advantages and disadvantages of a given model of the Earth's structure
- Explain two properties of sedimentary rocks
- Explain how sedimentary rocks are made
- Compare the ways that igneous and metamorphic rocks form
- Explain how igneous and metamorphic rocks form
- Use the rock cycle to explain how the material in rocks is recycled
- Explain why the concentration of carbon dioxide in the atmosphere did not change for many years
- Use the carbon cycle to identify reservoirs of carbon
- Explain why global warming happens
- Explain some impacts of global warming
- Explain how aluminium is recycled
- Analyse the advantages and disadvantages of recycling

Physics Unit 2a: Electricity

- Explain how objects can become charged.
- Describe how charged objects interact.
- Describe what is meant by an electric field.
- Describe what is meant by current
- Describe how to measure current.
- Set up a circuit including an ammeter to measure current.
- Describe what is meant by potential difference.
- Describe how to measure potential difference.
- Describe the difference between series and parallel circuits.
- Describe how current and potential difference vary in series and parallel circuits.
- Describe what is meant by resistance.
- Calculate resistance of a component and of a circuit.
- Describe the difference between conductors and insulators in terms of resistance.
- Describe how magnets interact
- Draw field lines round a magnet in detail.
- Describe how to make an electromagnet.
- Describe how to change the strength of an electromagnet
- Describe some uses of electromagnets
- Describe how a simple motor works.