Year 7 Science Learning Outcomes

Biology Unit 1a: Cells

- Describe what a cell is.
- Explain how to use a microscope to observe a cell.
- Use a microscope to observe a prepared slide and state the magnification.
- Describe the functions of the components of a cell.
- Describe the similarities and differences between plant and animal cells.
- Prepare and observe cells on a microscope slide safely.
- Describe examples of specialised animal cells.
- Describe examples of specialised plant cells.
- Describe specialised features of plant and animal cells
- Name some substances that move into and out of cells.
- Describe the process of diffusion.
- Describe what a unicellular organism is.

Biology Unit 1b: Body Systems

- Define and state examples of tissues, organs, and organ systems.
- Explain the hierarchy of organisation in a multicellular organism.
- Describe the structure of the gas exchange system.
- Describe how parts of the gas exchange system are adapted to their function.
- Describe the processes of inhaling and exhaling.
- Describe the structure of the skeleton.
- Describe the functions of the skeletal system.
- Describe the role of joints in movement.
- Describe the function of major muscle groups.
- Explain how antagonistic muscles cause movement.

Biology Unit 1c: Reproduction

- State the difference between adolescence and puberty.
- Describe the main changes that take place during puberty.
- Describe the main structures in the male and female reproductive systems.
- Describe the function of the main structures in the male and female reproductive systems.
- Describe the structure and function of gametes
- Describe the processes of fertilisation.
- Describe what happens during gestation.
- Describe what happens during birth.
- State what the menstrual cycle is.
- Describe the main stages in the menstrual cycle.

- Identify the main structures of a flower.
- Describe the process of pollination.
- Describe the differences between wind-pollinated and insect-pollinated plants.
- Describe the process of fertilisation in plants.
- Describe how seeds and fruits are formed.
- State the ways seeds can be dispersed.

Physics Unit 1b: Sound

- Describe the different types of wave and their features.
- Describe what happens when water waves hit a barrier.
- Describe how sound is produced and travels
- Explain why the speed of sound is different in different materials.
- Contrast the speed of sound and the speed of light.
- Describe the link between loudness and amplitude.
- Describe the link between frequency and pitch.
- State the range of human hearing and describe how it differs from the ranges of hearing in animals.
- Describe how the ear works.
- Describe how your hearing can be damaged.
- Explain some risks of loud music.
- Describe what ultrasound is.
- Describe some uses of ultrasound.
- Explain, with reasons, why animals use echolocation.

Physics Unit 1c: Light

- Describe what happens when light interacts with materials.
- State the speed of light.
- Explain how images are formed in a plane mirror.
- Explain the difference between specular reflection and diffuse scattering.
- Describe and explain what happens when light is refracted.
- Describe what happens when light travels through a lens.
- Describe how the eye works.
- Explain what happens when light passes through a prism.
- Describe how primary colours add to make secondary colours
- Explain how filters and coloured materials subtract light.

Physics Unit 1d: Space

- Describe the objects that you can see in the night sky.
- Describe the structure of the Universe.
- Name the objects in the Solar System.
- Describe some similarities and differences between the planets of the Solar System.
- Explain the motion of the Sun, stars, and Moon across the sky.
- Explain why seasonal changes happen.
- Describe the phases of the Moon.
- Explain why you see phases of the Moon.
- Explain why eclipses happen.

Working Scientifically

- Recognise hazards in a laboratory.
- Create a prioritised list of safety rules.
- Decide how to protect yourself from a hazard.
- Use a top pan balance correctly and accurately.
- Describe what each piece of scientific equipment is used for in the lab.
- Plan how to work safely with a flame.
- Draw an accurate graph.
- Use a thermometer accurately.
- State the parts of a fire triangle.
- Identify control variables in an investigation.

Chemistry Unit 1a: Particles

- Describe how materials are made up of particles.
- Use the particle model to explain why different materials have different properties.
- Describe the properties of a substance in its three states.
- Use ideas about particles to explain the properties of a substance in its three states.
- Use observations to decide if substances are solids, liquids, or gases.
- Use the particle model to explain changes of state involving solids and liquids.
- Interpret data about melting points.
- Use the particle model to explain boiling.
- Describe changes of state involving gases.
- Use the particle model to explain evaporation, condensation, and sublimation.
- Use the particle model to explain diffusion.
- Describe evidence for diffusion.
- Use the particle model to explain gas pressure.
- Describe the factors that affect gas pressure.

Chemistry Unit 1b: Elements

- State what an element is.
- Recall the chemical symbols of six elements.
- State what atoms are.
- Compare the properties of one atom of an element to the properties of many atoms.
- State what a compound is.
- Explain why a compound has different properties to the elements in it.
- Write the chemical names for some simple compounds
- Write and interpret chemical formulae.
- Describe elements and compounds using familiar symbols and formulae.

Chemistry Unit 1c: Chemical Reactions

- Describe what happens to atoms in chemical reactions.
- Explain why chemical reactions are useful.
- Compare chemical reactions to physical changes.
- Identify chemical and physical reactions from practical observations.
- Identify reactants and products in word equations.

- Write word equations to represent chemical reactions.
- Predict products of combustion reactions.
- Explain conservation of mass in chemical reactions.
- Calculate masses of reactants and products.
- Describe the characteristics of exothermic and endothermic changes.
- Classify changes as exothermic or endothermic.

Chemistry Unit 1d: Acids and Alkalis

- Compare the properties of acids and alkalis.
- Describe differences between concentrated and dilute solutions of an acid.
- Identify and describe the meaning of hazard symbols and offer suitable safety precautions.
- Use the pH scale to measure acidity and alkalinity.
- Describe how indicators categorise solutions as acidic, alkaline, or neutral.
- Describe how pH changes in neutralisation reactions
- State examples of useful neutralisation reactions.
- Describe what a salt is.
- Predict the salts that form when acids react with metals or bases
- Present observations from the practical investigation as word equations.

Physics Unit 1a: Forces

- Explain what forces do.
- Describe what is meant by an interaction pair
- Describe how forces deform objects.
- Use Hooke's Law.
- Describe the effect of drag forces and friction.
- Explain why drag forces and friction arise.
- Describe the effect of gravitational forces on Earth and in space.
- Describe the difference between balanced and unbalanced forces
- Describe situations that are in equilibrium.
- Explain why the speed or direction of motion of objects can change.