KS3 Science

The Ripley Academy

Year 7

Unit Title	Unit Overview	Prior Knowledge / skills	New Learning
B1: Cells	Students will explore cell structure and the differences between plant and animal cells. Students will learn about some functions of cells and how to observe cells using a microscope.	Prior learning It is helpful if pupils know: • the names and functions of some major organs in plants and animals • about some of the life processes common to living things, eg movement, growth, reproduction, nutrition	• The names and functions of cell organelles • How specialised cells are adapted to perform specific functions • How to use a microscope to observe cells
B2: Organisation	In this topic students will explore the way in which the human body performs different functions using different organ systems	Prior learning It is helpful if pupils know: • Names of different organs • Specialised cells • Basic knowledge of the skeleton	• How cells, tissues and organs work together to perform bodily functions • How breathing happens • How muscles work in antagonistic pairs to cause movement
B3: Reproduction	Students will study the process of reproduction in plants and animals.	• Reproductive body parts • Basic parts of a plant • Specialised cells	• Reproduction in humans • Reproduction in plants • Development of a foetus • Adolescence and puberty
C1: Particle theory	Students will explain the properties of solids, liquids and gasses by looking at the particle model of matter	• The basic properties of solids liquids and gasses • Examples of different solids, liquids and gasses	• The particle model for solids liquids and gasses

		• Examples of melting, freezing and evaporation	• What diffusion is and what factors affect the rate of diffusion • How substances change state
C2: Atoms, elements and compounds	In this topic students will learn the difference between atoms, elements and compounds. They will study the structure of different atoms in terms of protons, neutrons and electrons.	• The particle model of matter	• The structure of an atom • Differences between atoms, elements and compounds • How to represent atoms, compounds and mixtures using diagrams.
C3: Chemical reactions	In this topic students will use a variety of experimental techniques to conduct simple chemical reactions. Students will learn how to write chemical equations to represent these reactions.	• Common chemical reactions such as combustion • Changing states • Identifying solids, liquids and gasses	• The differences between chemical reactions and physical changes • How to represent chemical reactions using word and symbol equations • How to perform chemical reactions safely
C4: Acids and alkalis	Students will learn about the pH scale and uses and dangers of acids and alkalis as well as how to identify them using chemical indicators.	• Properties of different household substances • How to represent chemical reactions using word and symbol equations • How to perform chemical reactions safely	• The pH scale • Common acids and alkalis • Neutralisation reactions between acids and alkalis • How to use indicators to identify the pH of a substance
P1: Forces	In this topic students will learn about the effects of different forces on objects and how to measure and calculate the size of different forces.	• Naming basic forces such as air resistance and friction • Basic effects of forces on objects	• How to represent forces using scientific diagrams • How to calculate the resultant force acting on an object

			• How to use a newton meter to measure the force acting on an object
P2: Waves and sound	Students will learn how sound travels, how sounds are heard and the uses of sounds such as echolocation.	• Particle model of matter • Basic understanding and experience of echoes	• The differences between transverse and longitudinal waves • How sound travels through different mediums • How we hear sounds • How sound waves are used in echolocation
P3: Light	In this topic students will learn about different properties of light, including reflection, refraction and colour mixing.	• The order of the colours in the visible light spectrum (rainbow) • Transcluent, transparent and opaque materials	• The law of reflection • Refraction • Colour mixing and how we see different cololurs
P4: Space	Students will study the features of the night sky, including planets, stars, satellites, and the moon.	• Basics about the solar system • Observations of the night sky • Interesting facts about space to share with the group!	• The planets in our solar system • Features of the night sky • What causes the different seasons on earth • The moon

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Year 8

Unit Title	Unit Overview	Prior Knowledge / skills	New Learning
B1: Healthy Lifestyle	In this topic students will learn about the nutrients required for a healthy diet, as well as the dangers of smoking, drugs, alcohol and obesity.	• Organs of the digestive system • Healthy foods and diet • Making healthy lifestyle choices	• The digestive system • Deficiencies • The effects of smoking, drugs and alcohol • Introduction to digestive enzymes
B2: Ecosystems	In this unit students will learn about food webs and chains in different ecosystems and interdependence within an ecosystem.	• What are predators and preys • Cells	• Food webs and chains • Pyramids of biomass and numbers • Interdependence within ecosystems • Photosynthesis and respiration
B3: Adaptation	In this topic students will learn about how species have evolved over time and how different organisms are adapted for the environments they live in.	• Cells • Reproduction • Inheritance and genetics	• Theories of evolution • How animals are adapted to different environments • Extinction • Genetic engineering
C1: The Periodic Table	In this topic students will learn about the elements in different groups of the periodic table, their properties and reactions.	• Atoms, elements and compounds • Atomic structure • Chemical reactions and writing chemical equations	• How elements are arranged on the periodic table • Trends in reactivity • Properties of metals and non metals
C2: Separating Mixture	Students will learn the theory behind different separation techniques and apply these to practical activities to separate different types of mixtures.	• Atoms, elements and compounds • States of matter and changing states • The particle model of matter	• How to separate mixtures using the following practical techniques: filtration, evaporation, distillation and paper chromatography • Theory behind these practical techniques • Making solutions and factors affecting solubility

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C3: Metals and Acids	In this topic students will investigate the properties of metals and how they react with acids and other substances.	• Chemical reactions and writing chemical equations • The pH scale and acids • Trends of the periodic table	• Properties of metals • Reactions of metals and acids • Displacement reactions
C4: Earth and Atmosphere	In this topic, students will learn about the structure of the earth and it's atmosphere as well as studying different environmental problems such as pollution and climate change.	• Atoms, elements, compounds and mixtures • States of matter • Combustion reactions	• The structure of the earth and atmosphere • The formation and properties of sedimentary, metamorphic and igneous rock • Global warming and pollution
P1: Electricity	In this topic students will learn about electricity, how to build functional electrical circuits and how to calculate resistance, current and potential difference.	• Conductors and insulators • Properties of metals	• How to build electrical circuits • How to measure current and potential difference in an electrical circuit • How to calculate resistance, current and potential difference
P2: Energy	In this topic students will learn about different energy stores and resources and how energy is transferred in different systems.	•	• Renewable and non renewable energy resources • Energy forms and stores • Conservation of energy
P3: Motion and Pressure	In this topic students will learn how to calculate speed, acceleration, pressure and moments and examples of these in everyday life.	• Particle theory and states of matter • Balanced and unbalanced forces • Drawing and interpreting graphs	• How to calculate speed and how speed is represented on distance time graphs • What causes pressure in liquids and gasses • How to calculation pressure and moments