

Achievement aims and objectives as a table

Strand	Level 6	Level 7	Level 8
Achievement aim	Learn about science as a knowledge system: the features of scientific knowledge and the processes by which it is developed; and learn about the ways in which the work of scientists interacts with society.		
Nature of Science: Understanding about science	Understand that scientists' investigations are informed by current scientific theories and aim to collect evidence that will be interpreted through processes of logical argument	Understand that scientists have an obligation to connect their new ideas to current and historical scientific knowledge and to present their findings for peer review and debate	Understand that scientists have an obligation to connect their new ideas to current and historical scientific knowledge and to present their findings for peer review and debate
Achievement aim	Carry out science investigations using a variety of approaches: classifying and identifying, pattern seeking, exploring, investigating models, fair testing, making things, or developing systems.		
Nature of Science: Investigating in science	Develop and carry out more complex investigations, including using models. Show an increasing awareness of the complexity of working scientifically, including recognition of multiple variables Begin to evaluate the suitability of the investigative methods chosen	Develop and carry out investigations that extend their science knowledge, including developing their understanding of the relationship between investigations and scientific theories and models	Develop and carry out investigations that extend their science knowledge, including developing their understanding of the relationship between investigations and scientific theories and models
	Develop knowledge of the vocabulary, numeric and symbol systems, and conventions of science and use this knowledge to communicate about their own and others' ideas.		

Nature of Science: Communicating in science	Use a wider range of science vocabulary, symbols, and conventions. Apply their understandings of science to evaluate both popular and scientific texts (including visual and numerical literacy)	Use accepted science knowledge, vocabulary, symbols, and conventions when evaluating accounts of the natural world and consider the wider implications of the methods of communication and/or representation employed	Use accepted science knowledge, vocabulary, symbols, and conventions when evaluating accounts of the natural world and consider the wider implications of the methods of communication and/or representation employed
Bring a scientific perspective to decisions and actions as appropriate.			
Nature of Science: Participating and Contributing	Develop an understanding of socio-scientific issues by gathering relevant scientific information in order to draw evidence-based conclusions and to take action where appropriate	Use relevant information to develop a coherent understanding of socio-scientific issues that concern them, to identify possible responses at both personal and societal levels	Use relevant information to develop a coherent understanding of socio-scientific issues that concern them, to identify possible responses at both personal and societal levels
Understand the processes of life and appreciate the diversity of living things.			
Living World: Life processes	Relate key structural features and functions to the life process of plants, animals, and micro-organisms and investigate environmental factors that affect these processes	Explore the diverse ways in which animals and plants carry out life processes	Understand the relationship between organisms and the environment
Understand how living things interact with each other and with the nonliving environment.			
Living World: Ecology	Investigate the impact of human actions on a New Zealand ecosystem	Explore ecological distribution patterns and explain possible causes for these patterns	Explore the evolutionary processes that have resulted in the diversity of life on Earth and appreciate the place and impact of humans within these processes

	Understand the processes that drive change in groups of living things over long periods of time and be able to discuss the implications of these changes.		
Living World: Evolution	Explore patterns in the inheritance of genetically controlled characteristics. Explain the importance of variation within a changing environment	Understand that DNA and the environment interact in gene expression Explain how the interaction between ecological factors and natural selection leads to genetic change within populations	Understand how humans manipulate the transfer of genetic information from one generation to the next and make informed judgments about the social, ethical, and biological implications relating to this manipulation
	Investigate and understand the spheres of the Earth system: geosphere (land), hydrosphere (water), atmosphere (air), and biosphere (life). Investigate and understand that the geosphere, hydrosphere, atmosphere, and biosphere are connected via a complex web of processes.		
Planet Earth and Beyond: Earth systems and interacting systems	Investigate the external and internal processes that shape and change the surface features of New Zealand Develop an understanding of how the geosphere, hydrosphere, atmosphere, and biosphere interact to cycle carbon around Earth	Develop an understanding of the causes of natural hazards and their interaction with human activity on Earth	Develop an in-depth understanding of the interrelationship between human activities and the geosphere, hydrosphere, atmosphere, and biosphere over time
	Investigate and understand relationships between the Earth, Moon, Sun, solar system, and other systems in the universe.		
Planet Earth and Beyond: Astronomical systems	Investigate the interactions between the solar, lunar, and Earth cycles and the effect of these on Earth	Explain the nature and life cycles of different types of stars in terms of energy changes and time	Explore recent astronomical events or discoveries, showing understanding of the concepts of distance and time
	Explore and investigate physical phenomena in everyday situations. Gain an understanding of the interactions that take place between different parts of the physical world and the ways in which these interactions can be represented.		

Physical World: Physical inquiry and physics concepts	Investigate trends and relationships in physical phenomena (in the areas of mechanics, electricity, electromagnetism, heat, light and waves, and atomic and nuclear physics) Demonstrate an understanding of physical phenomena and concepts by explaining and solving questions and problems that relate to straightforward situations	Investigate physical phenomena (in the areas of mechanics, electricity, electromagnetism, heat, light and waves, and atomic and nuclear physics) and produce qualitative and quantitative explanations for a variety of unfamiliar situations Analyse data to deduce complex trends and relationships in physical phenomena	Investigate physical phenomena (in the areas of mechanics, electricity, electromagnetism, heat, light and waves, and atomic and nuclear physics) and produce qualitative and quantitative explanations for a variety of complex situations Analyse and evaluate data to deduce complex trends and relationships in physical phenomena
Apply their understanding of physics to various applications.			
Physical World: Using physics	Investigate how physics knowledge is used in a technological or biological application	Use physics ideas to explain a technological or biological application of physics	Use physics ideas to explain a technological, biological, or astronomical application of physics and discuss related issues
Investigate the properties of materials.			
Material World: Properties and changes of matter	Identify patterns and trends in the properties of a range of groups of substances, for example, acids and bases, metals, metal compounds, and hydrocarbons Explore factors that affect chemical processes	Investigate and measure the chemical and physical properties of a range of groups of substances, for example, acids and bases, oxidants and reductants, and selected organic and inorganic compounds	Investigate and measure the chemical and physical properties of a range of groups of substances, for example, acids and bases, oxidants and reductants, and selected organic and inorganic compounds
Interpret their observations in terms of the particles (atoms, molecules, ions, and sub-atomic particles), structures, and interactions present. Understand and use fundamental concepts of chemistry.			

Material World: The structure of matter	Distinguish between atoms, molecules, and ions (includes covalent and ionic bonding) Link atomic structure to the organisation of the periodic table Use particle theory to explain factors that affect chemical processes	Relate properties of matter to structure and bonding Develop an understanding of and use the fundamental concepts of chemistry (for example, equilibrium and thermochemical principles) to interpret observations	Relate properties of matter to structure and bonding Develop an understanding of and use the fundamental concepts of chemistry (for example, equilibrium and thermochemical principles) to interpret observations
Make connections between the concepts of chemistry and their applications and show an understanding of the role chemistry plays in the world around them.			
Material World: Chemistry and society	Investigate how chemical knowledge is used in a technological application of chemistry	Apply knowledge of chemistry to explain aspects of the natural world and how chemistry is used in society to meet needs, resolve issues, and develop new technologies	Apply knowledge of chemistry to explain aspects of the natural world and how chemistry is used in society to meet needs, resolve issues, and develop new technologies