

SCIENCE - MANDATORY

In Stage 4 Science, students identify questions and problems that they can test or research scientifically. They select and use appropriate strategies, understanding and skills to generate creative plausible solutions to identified problems. Individually and collaboratively they plan and conduct a range of types of first-hand investigations, including fieldwork and controlled experimental methods ensuring that fairness, safety and ethical guidelines are followed. Students process and analyse data and information from first-hand investigations and secondary sources to identify trends, patterns and relationships, drawing relevant, evidence based conclusions. They reflect on how the methods, strategies used and the quality of data obtained could be improved. Their ideas, methods and findings are communicated to a given audience using appropriate scientific language, representations and text types, with information sources acknowledged using a recognised method.

Students describe the action of unbalanced forces on the motion of objects in everyday situations, including the Earth's gravity. They discuss how developments in scientific knowledge and technology have contributed to finding solutions to problems involving the use of energy transfers and transformations in simple systems and how the solutions may impact on other areas of society. Students relate the structure and function of living things to their classification, survival and reproduction. They predict the effects of environmental changes on ecosystems and how scientific understanding influences the development of some management practices. They explain the contribution and influence of scientific knowledge and technological advances in finding solutions to contemporary issues and that these solutions may involve ethical considerations. Students describe the dynamic nature of models, theories and laws in developing scientific understanding of the Earth, solar system and observed properties and behaviour of matter. They describe processes occurring in and on the Earth and the time scales involved, as well as situations where understanding and skills from across the disciplines of Science are used in exploration for resources and obtaining and processing of materials. They explain how advances in scientific understanding influence the choices people make about resource use and management practices in shaping sustainable futures. Students relate the physical and chemical properties of matter to how materials are processed and used by society in everyday life. They describe situations where scientific knowledge and collaboration between scientists generates solutions to obtaining and making new substances from the Earth's spheres.