

The Australian Curriculum

Subjects	Science
Year levels	Year 8

Year 8 Content Descriptions

Science Understanding

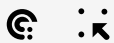
Biological sciences

Cells are the basic units of living things; they have specialised structures and functions

(ACSSU149 - Scootle [↗](#))

Elaborations

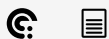
examining a variety of cells using a light microscope, by digital technology or by viewing a simulation



distinguishing plant cells from animal or fungal cells



identifying structures within cells and describing their function



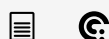
recognising that some organisms consist of a single cell



recognising that cells reproduce via cell division



describing mitosis as cell division for growth and repair



Multi-cellular organisms contain systems of organs carrying out specialised functions that enable them to survive and reproduce (ACSSU150 - Scootle [↗](#))

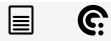


Elaborations

identifying the organs and overall function of a system of a multicellular organism in supporting the life processes



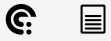
describing the structure of each organ in a system and relating its function to the overall function of the system



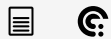
examining the specialised cells and tissues involved in structure and function of particular organs



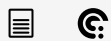
comparing similar systems in different organisms such as digestive systems in herbivores and carnivores, respiratory systems in fish and mammals




distinguishing between asexual and sexual reproduction



comparing reproductive systems of organisms

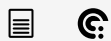


Chemical sciences

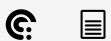
Properties of the different states of [matter](#) can be explained in terms of the motion and arrangement of particles ([ACSSU151 - Scootle](#) )

Elaborations

explaining why a model for the structure of matter is needed




modelling the arrangement of particles in solids, liquids and gases



using the particle model to explain observed phenomena linking the energy of particles to temperature changes



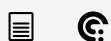
Differences between elements, compounds and mixtures can be described at a particle level ([ACSSU152 - Scootle](#) )

Elaborations

modelling the arrangement of particles in elements and compounds




recognising that elements and simple compounds can be represented by symbols and formulas



locating elements on the periodic table



Chemical change involves substances reacting to form new substances ([ACSSU225 - Scootle](#) )

Elaborations

identifying the differences between chemical and physical changes



identifying evidence that a chemical change has taken place




investigating simple reactions such as combining elements to make a compound



recognising that the chemical properties of a substance, for example its flammability and ability to corrode, will affect its use



Earth and space sciences

Sedimentary, igneous and metamorphic rocks contain minerals and are formed by processes that occur within Earth over a variety of timescales ([ACSSU153 - Scootle](#) )

Elaborations

representing the stages in the formation of igneous, metamorphic and sedimentary rocks, including indications of timescales involved



identifying a range of common rock types using a key based on observable physical and chemical properties



recognising that rocks are a collection of different minerals




considering the role of forces and energy in the formation of different types of rocks and minerals



recognising that some rocks and minerals, such as ores, provide valuable resources



Physical sciences

Energy appears in different forms, including movement (kinetic energy), heat and potential energy, and energy transformations and transfers cause change within systems ([ACSSU155 - Scootle](#) )

Elaborations

recognising that kinetic energy is the energy possessed by moving bodies



recognising that potential energy is stored energy, such as gravitational, chemical and elastic energy



investigating different forms of energy in terms of the effects they cause, such as gravitational potential causing objects to fall and heat energy transferred between materials that have a different temperature



recognising that heat energy is often produced as a by-product of energy transfer, such as brakes on a car and light globes




using flow diagrams to illustrate changes between different forms of energy



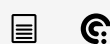
Science as a Human Endeavour

Nature and development of science

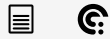
Scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available ([ACSHE134 - Scootle](#) )

Elaborations

investigating developments in the understanding of cells and how this knowledge has impacted on areas such as health and medicine



discovering how people's understanding of the nature of matter has changed over time as evidence for particle theory has become available through developments in technology




considering how the idea of elements has developed over time as knowledge of the nature of matter has improved



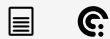
investigating the development of the microscope and the impact it has had on the understanding of cell functions and division



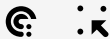
Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures ([ACSH226 - Scootle](#) )

Elaborations

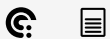
investigating how knowledge of the location and extraction of mineral resources relies on expertise from across the disciplines of science




considering how advances in technology, combined with scientific understanding of the functioning of body systems, has enabled medical science to replace or repair organs



researching the use of reproductive technologies and how developments in this field rely on scientific knowledge from different areas of science



Use and influence of science

Solutions to contemporary issues that are found using science and [technology](#), may impact on other areas of society and may involve ethical considerations ([ACSH135 - Scootle](#) )

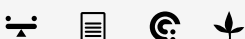


Elaborations

investigating requirements and the design of systems for collecting and recycling household waste



investigating strategies implemented to maintain part of the local environment, such as bushland, a beach, a lake, a desert or a shoreline



investigating how energy efficiency can reduce energy consumption




investigating the development of vehicles over time, including the application of science to contemporary designs of solar-powered vehicles



discussing ethical issues that arise from organ transplantation

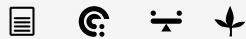


People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity ([ACSHE136 - Scootle](#) )



Elaborations

describing how technologies have been applied to modern farming techniques to improve yields and sustainability



investigating how Aboriginal people recognise relationships in ecosystems by burning to promote new growth, attract animals and afford easier hunting and food gathering



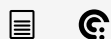
describing the impact of plant cloning techniques (asexual production) in agriculture such as horticulture, fruit production and vineyards



investigating the role of science in the development of technology important to the economies and communities of the Asia–Pacific regions, for example car manufacture, earthquake prediction and electronic optics



recognising the role of knowledge of the environment and ecosystems in a number of occupations



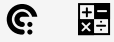
considering how engineers improve energy efficiency of a range of processes



recognising the role of knowledge of cells and cell divisions in the area of disease treatment and control




investigating how scientists have created new materials such as synthetic fibres, heat-resistant plastics and pharmaceuticals



Science Inquiry Skills

Questioning and predicting

Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge ([AC SIS139 - Scootle](#) )

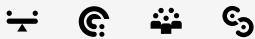


Elaborations

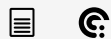
considering whether investigation using available resources is possible when identifying questions or problems to investigate




recognising that the solution of some questions and problems requires consideration of social, cultural, economic or moral aspects rather than or as well as scientific investigation



using information and knowledge from their own investigations and secondary sources to predict the expected results from an investigation



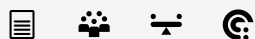
Planning and conducting

Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed ([AC SIS140 - Scootle](#) )

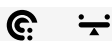


Elaborations

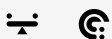
working collaboratively to decide how to best approach an investigation




identifying any ethical considerations that may apply to the investigation



taking into consideration all aspects of fair testing, available equipment and safe investigation when planning investigations



Measure and control variables, select equipment appropriate to the task and collect **data** with accuracy ([AC SIS141 - Scootle](#) )

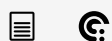


Elaborations


using specialised equipment to increase the accuracy of measurement within an investigation



identifying and explaining the differences between controlled, dependent and independent variables



Processing and analysing data and information

Construct and use a range of representations, including graphs, keys and models to represent and **analyse** patterns or relationships in **data** using **digital technologies** as appropriate ([AC SIS144 - Scootle](#) )

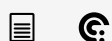



Elaborations

describing measures of central tendency and identifying outliers for quantitative data



explaining the strengths and limitations of representations such as physical models, diagrams and simulations in terms of the attributes of systems included or not included



Summarise **data**, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions based on **evidence** ([AC SIS145 - Scootle](#) )

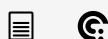


Elaborations


constructing tables, graphs, keys and models to represent relationships and trends in collected data



drawing conclusions based on a range of evidence including primary and secondary sources



Evaluating

Reflect on scientific investigations including evaluating the quality of the data collected, and identifying improvements ([AC SIS146 - Scootle](#) )



Elaborations

suggesting improvements to investigation methods that would improve the accuracy of the data recorded



discussing investigation methods with others to share ideas about the quality of the inquiry process



Use scientific knowledge and findings from investigations to evaluate claims based on evidence ([AC SIS234 - Scootle](#) )



Elaborations

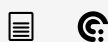
identifying the scientific evidence available to evaluate claims




deciding whether or not to accept claims based on scientific evidence



identifying where science has been used to make claims relating to products and practices



Communicating

Communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate ([AC SIS148 - Scootle](#) )



Elaborations

using digital technologies to construct a range of text types to present science ideas



selecting and using appropriate language and representations to communicate science ideas within a specified text type and for a specified audience

