Australian Curriculum - Year 7

Introduction:

This document maps Education Perfect lessons to the Australian Curriculum. When a lesson covers both science understanding standards and science as a human endeavour or science inquiry skills standards, it will be listed in both sections.

Contents:

Science Understanding

Key:

📖 Lessons that address the science understanding standard.

💡 Lessons that elaborate or extend above and beyond the curriculum.

🧑 Lessons that also fulfil science as a human endeavour standards.

🔍 Lessons that also fulfil science inquiry skills standards.

Biological Sciences

Relevant section of the science achievement standard:

By the end of Year 7, students … predict the effect of human and environmental changes on interactions between organisms and classify and organise diverse organisms based on observable differences.

Standards:

Classification helps organise the diverse group of organisms. (ACSSU111)

📖	**Introduction to Classification**	Smart Lesson introducing the principles of classification.
📖	**Uses of Classification**	Smart Lesson about why classification is useful to scientists, especially biologists.
📖	**Living or Non-Living?**	How to classify things as living or non-living, and an introduction to unicellular and multicellular organisms.
📖	**MRS GREN**	Introduction to the seven life processes.
📖	**Types of Keys**	A Smart Lesson on how to read and build dichotomous keys.
📖	**Linnaean Classification**	Carolus Linnaeus and his contributions to the field of taxonomy, including the seven levels of classification.
📖	**Binomial Nomenclature**	Smart Lesson on binomial nomenclature and writing scientific names.

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	Species and Hybrids	Smart Lesson on the reproductive definition of species and hybrids.
	Animal Phyla	Smart Lesson on animals classified at the level of phylum.
	The Six Kingdoms	Smart Lesson on the six major kingdoms of life.
	Vertebrates	Smart Lesson on vertebrates and the place of humans on the Tree of Life.
	Carl Linnaeus	In this lesson, students will learn about the life of Carl Linnaeus and the contributions he made to science.
	Identifying Species	In this lesson, students will learn about how scientists determine if two organisms are from the same species or different species.
	Plant Divisions	Smart Lesson on the classification of plants based on how they reproduce.
	The Platypus	Smart Lesson on how scientists classified the platypus, given that it has both mammalian and bird-like characteristics.
	Building Dichotomous Keys	In this investigation students will build a dichotomous key to classify leaves.
	Classifying Leaves	In this investigation, students will classify leaves into groups based on their shape.
	Researching Phyla	In this investigation, students will be doing research to compare and contrast two animals from the same phylum.
	Using Dichotomous Keys	In this investigation, students will be using a dichotomous key to identify dragons.

Interactions between organisms, including the effects of human activities can be represented by food chains and food webs. (ACSSU112)

	Ecology	A smart lesson introducing ecology, the biosphere and biomes.
	Species vs Organism	Smart Lesson explaining the difference between a species and an organism.
	Ecosystem	An introductory lesson on ecosystems and what they contain.
	Biotic and Abiotic Factors	Smart Lesson on the differences between biotic and abiotic factors in an ecosystem.
	Interdependent Relationships	A Smart Lesson introducing types of symbiotic relationships, including commensalism, mutualism and parasitism.
	Predators, Prey and Competition	A Smart Lesson introducing and explaining predators, prey and competitors.
	Producers and Photosynthesis	A Smart Lesson introducing and explaining producers and the plant process of photosynthesis.
	Consumers	A Smart Lesson introducing and explaining trophic levels and consumers.
	Food Chains	A Smart Lesson explaining food chains.

	Food Webs	A Smart Lesson explaining food webs.
	Adaptations	A smart lesson explaining what structural, behaviour and physiological adaptations are and how they aid in an organisms' survival.
	Cane Toads as an Introduced Species	Smart Lesson on the impact cane toads have on native ecosystems.
	Deforestation	Smart Lesson on the impact deforestation has on native ecosystems.
	Diurnal vs Nocturnal	Smart Lesson on the differences between diurnal and nocturnal animals.
	Ecosystem Conservation	Smart Lesson on the steps the Australian Government is taking to conserve native ecosystems.
	Introduced Species	Smart Lesson about the impact introduced species have on native ecosystems.
	Oil Pollution and Industrial Waste	Smart Lesson on the impact industrial waste and oil spills have on ecosystems.
	Pesticides	Smart Lesson on the impact pesticides have on native ecosystems.
	Scientific Methods of Conservation	Smart Lesson on how scientific methods are used to protect native ecosystems and at-risk species
	Species Conservation	Smart Lesson on the steps the Australian Government is taking to protect native species
	Water Pollution	Smart Lesson on the impact water pollution has on ecosystems.
	Antarctica	This lesson teaches students about life on the icy continent of Antarctica.
	Australian Bushfires	A Smart Lesson on Australian bushfires and aboriginal fire-stick farming.
	Global Warming	In this lesson students will learn about global warming and what it does to ecosystems.
	Introduced and Invasive Species	This lesson teaches what introduced and invasive species are. It explains how invasive species can affect native species and ecosystems.
	Invasive Species in Australia	This lesson is about the invasive cane toad and rabbits.
	Pollution and Ecosystems	This lesson teaches students about how pollution can affect whole ecosystems. It includes an the example of how pollution affects the Great Barrier Reef.
	Saving the Tasmanian Devil	In this lesson students learn about the Tasmanian devil and the disease that threatens it with extinction.
	What is Pollution?	This lesson teaches students what pollution is, where it comes from and what it does to living things.
	Build a Food Web	In this investigation, students will build a food web using a list of species and information about what they eat.
	Collecting Invertebrates in Quadrats	In this investigation, students will collect invertebrates and use them to estimate biodiversity.
	Extracting Leaf Pigments	In this investigation, students will extract pigments from plant leaves.
	Growing Plants Under Different Conditions	In this investigation, students will design an experiment for testing how plants grow under different conditions.

Q	**Measuring Abiotic Factors in Water**	In this investigation, students will measure the abiotic factors temperature, pH, salinity and turbidity in three different water samples.
	Sustainable Bush Tucker	This Smart Lesson describes some of the sustainable hunting and gathering techniques used by Australian Aboriginals. This lesson can be used to improve reading comprehension in students.
Q	**Marine Ecosystems and Overfishing**	Data is presented on overfishing to help students learn to read column graphs, pie charts and tables.

Chemical Sciences

Relevant section of the science achievement standard:

By the end of Year 7, students describe techniques to separate pure substances from mixtures.

Standards:

Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques. (ACSSU113)

	Introduction to Mixtures	Introducing concepts such as particles, mixtures, and pure versus impure substances.
	Pure and Impure Substances	Smart Lesson on the difference between pure and impure substances
	Solute and Solvent	Smart Lesson on the differences between solutes and solvents, and how they combine to form a solution.
	Concentrations	Smart Lesson on concentration, and comparing the amount of solute in a solution.
	Suspensions	Smart Lesson on suspensions, including how they are created.
	Colloids	Smart Lesson on the definition of colloids, their common characteristics, and how they are produced.
	Emulsions	Smart Lesson on emulsions, including some common examples and how they are different from other colloids.
	Introduction to Separation	An introductory lesson to the various ways that mixtures can be separated, including straining and decanting.
	Filtration	Smart lesson on filtration and its use in the laboratory.
	Centrifuging	Smart lesson on the use of centrifuging to separate suspensions.

Evaporation	Introduction to evaporation and how it can be used to separate solutions.	
Distillation	Smart lesson on distillation and how it can be used to separate the liquid parts of a solution.	
Adsorption	Smart lesson on adsorption and how it is used to remove dangerous particles from air or water.	
Chromatography	Smart lesson on chromatography and how it is used to identify parts of a solution.	
Crystallisation	Smart lesson on crystallisation and how it is used to bring solids out of solutions.	
Magnetic and Electrostatic Separation	Smart lesson on the use of magnetic and electrostatic suspension techniques.	
Open-Ended Separation Investigation	Investigation into a mixture of many parts, and how we can use the techniques we have learned to separate it.	
Blood as a Mixture	Smart Lesson on blood, focusing on how it is a mixture. This lesson also looks at the functions of the different components which make up blood.	
Indigenous Art using Mixtures	Smart Lesson on how Indigenous Australians used mixtures in their art.	
Recycling Sewage	Smart lesson discussing the methods used to treat sewage.	
Separation in Food	Smart Lesson on some separation processes used to create specific food products.	
Separation in Industries	Smart lesson exploring how separation is used in mining.	
Water Treatment	Smart lesson exploring how water is treated from source to tap. Discusses separation techniques used in the water treatment process.	
Candy Crystals	Observational investigation where students create candy crystals.	
Chromatography: Separating Colours	Observational investigation where students do paper chromatography.	
Filtration	Hypothesis-driven investigation where students compare the use of two different folds of filter paper.	
Making a Solar Still	Observational investigation where students build their own solar still as a way to create clean water from plants and dirty water.	
Separating a Basic Mixture	Investigation where students devise their own method for separating a mixture.	
Temperature and Dissolving	Observational investigation where students observe how dissolving is affected by the temperature of a solution.	
The Cave of the Crystals	In this lesson, students watch a video about the Cave of the Crystals in Mexico, then answer questions testing their understanding.	
The Mystery of Opals	Science Comprehension where students read about the formation and structure of opals.	
Graphs and Tables of Mixtures	Students interpret different types of graphs containing data on the contents of various mixtures. The graphs include pie charts, column graphs and tables.	

🔍	**Saturation and Line Graphs**	Students practice interpret line graphs containing data on concentrations of solutions. From the graph, they identify the point of saturation.

Earth and Space Sciences

Relevant section of the science achievement standard:

By the end of Year 7, students … explain how the relative positions of Earth, the sun and moon affect phenomena on Earth. They analyse how the sustainable use of resources depends on the way they are formed and cycle through Earth systems.

Standards:

Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon.
(ACSSU115)

	The Universe	A Smart Lesson introducing the solar system, planets, stars and constellations.
	Gravity	A Smart Lesson on gravity and orbits.
	Comets	A smart lesson on comets.
	Asteroids and Meteoroids	A smart lesson on asteroids and meteoroids.
	Earth, Moon and Sun	An introduction to the positions and movements of the Earth, Moon and Sun.
	Day and Night	Smart Lesson on why there are different day lengths at different times of the year.
	Time Zones	Smart Lesson on what time zones are and why they exist.
	Seasons	Smart Lesson on why different seasons occur.
	Phases	Smart Lesson on the different phases of the moon.
	Tides	Smart Lesson on how the Sun, Moon, and Earth interact to create tides.
	Lunar Eclipse	Smart Lesson on what Lunar Eclipses are and how they occur.
	Solar Eclipse	Smart Lesson on what Solar Eclipses are and how they occur.
	Earth's Magnetic Field	Introduction to the Earth's magnetic field, compasses and the aurora.

	Earth's Structure	Explanation of the layers of the Earth.
	Planetary Motion	Extension lesson about how planets move around the Sun and why they move this way.
	Calendars and the Solar Year	Smart Lesson about calendars and how they were developed, including a section on Indigenous Australian peoples' calendars.
	Changing Seasons	This Smart Lesson describes how seasonal changes affect people in a variety of activities.
	Exploring Space	Smart Lesson introducing how to get humans to space, and how advances in space missions have provided new evidence about space. Apollo 11, Curiosity, New Horizons and Voyager 1 are also covered.
	Indigenous Constellations	Smart Lesson about how Indigenous Australian peoples use constellations in different areas of life, e.g. for navigation and storytelling.
	Models of the Solar System	Development of the Geocentric and Heliocentric Models of the Solar System.
	Satellites	Smart Lesson introducing satellites and their uses, including in GPS and the International Space Station.
	Telescopes	Smart Lesson about how telescopes were developed, including the Hubble Space Telescope.
	Making a Sundial	In this investigation, students will make a sundial.
	Modelling Gravity	An experiment where students use ropes to simulate the motion of planets around the Sun, and the Moon around the Earth.
	Modelling the Earth, Moon and Sun	An experiment where models of the Earth and Moon are used with a light source to simulate day, night and eclipses.
	Making a Pinhole Camera	In this investigation, students will make a pinhole camera that can be used to indirectly observe the Sun.
	Using a Pinhole Camera to Calculate Diameter of the Sun	In this investigation, students will use a pinhole camera to observe the sun and estimate its diameter.
	Seasons and the Angle of the Sun	In this investigation, students will simulate how solar energy hits different parts of the Earth.

Some of Earth's resources are renewable, including water that cycles through the environment, but others are non-renewable. (ACSSU116)

	Introduction to Earth's Resources	An introduction to what resources are, including renewable and non-renewable resources.
	Renewable and Non-Renewable Energy Sources	Introduction to the different energy sources used in Australia and whether they are renewable or non-renewable.
	Fossil Fuels as a Resource	Smart Lesson on the different types of fossil fuels and how they are formed.
	Soil as a Resource	Smart Lesson on the formation of fertile soil and the importance of sustaining it.
	Minerals and Ores as Resources	Other resources from rocks, especially gemstones and metals.

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	Mining	Smart Lesson on mineral resources, processes of extraction and ways to make them more sustainable.
	Nuclear Fuel as a Resource	Introduction to nuclear fuel as a non-renewable resource.
	Living Things as a Resource	Introduction to the concept that living things are renewable resources.
	Air as a Resource	Introduction to air as a resource with a focus on how photosynthesis results in balanced oxygen and carbon dioxide levels.
	Wind as a Resource	Smart lesson on wind, wind formation and convection cells.
	Wind Turbines	Smart lesson on how wind turbines are used to produce electricity.
	Solar Energy	Introduction to solar energy, insolation and methods of collecting and using solar energy.
	Water Power	Smart lesson on the various ways we can use water to produce electricity.
	Geothermal Energy	Smart Lesson on how geothermal power stations produce electrical energy.
	Investigation: Coal vs Solar Power for Australia's Future	Smart lesson that compares coal and solar energy as non-renewable and renewable resources.
	Antarctica, a Shared Continent	This lesson describes the shared scientific community of Antarctica.
	Changing Seasons	This lesson describes how seasonal changes affect people in a variety of activities.
	Renewable Energy	This lesson describes the renewable energy options that Australia has available.
	Science, Tradition and Modern Medicine	This lesson describes the connections between science, tradition and modern medicine.
	Solar Oven	In this investigation, students build a solar oven and use it to heat water.
	Turbine Power	This investigation explores how wind and hydro turbines respond to different loads.
	The Power of Sunshine	A Smart Lesson introducing some novel applications of solar energy. This lesson can be used to improve reading comprehension in students.
	Choosing Renewables	This Smart Lesson presents data on renewable and non-renewable energy use for students to interpret.
	Water on Earth	Introduction to the distribution of water on Earth.
	States of Water	Introduction to the states of water.
	The Water Cycle as a Closed System	Introduction to closed and open systems with examples of each.
	Water Cycle	Introduction to the water cycle.
	Influences on the Water Cycle	Describes the factors that influence the progression of the water cycle.
	Aquifers	An introduction to aquifers, how they form, and what they're used for.

	Irrigation	A smart lesson introducing how we water our plants. Goes over the spray and flood irrigation types.
	Water Conservation	A smart lesson on how we recycle water and why we do it.
	Water Management	This lesson describes the importance of effective water management skills in Australia.
	Evaporation	This investigation explores the connection between surface area and evaporation.
	Make Your Own Aquifer	This investigation explores the formation and extraction of groundwater.
	Weather in a Jar	This investigation explores the factors that lead to cloud and rain formation.
	Reading a Weather Map	This Smart Lesson teaches students how to identify key features on weather maps, including pressure and temperature.

Physical Sciences

Relevant section of the science achievement standard:

By the end of Year 7, students … represent and predict the effects of unbalanced forces, including Earth's gravity, on motion.

Standards:

Change to an object's motion is caused by unbalanced forces, including Earth's gravitational attraction, acting on the object. (ACSSU117)

	What are Forces?	An introduction into forces and their effects on objects.
	Drawing Forces	An explanation of how to draw the actions of forces onto objects to understand how they affect motion.
	Balanced and Unbalanced Forces	Learning to identify unbalanced and balanced forces, and identifying the applying and receiving forces.
	Contact and Non-Contact Forces	Classifying forces based on whether they are contact or non-contact.
	Gravity	An introduction to gravitational forces, weight and mass and gravity's effect in the solar system.
	Magnetism	An introduction to magnets and magnetic fields.
	Levers	Smart lesson on levers and the classes of levers.
	Inclined Planes	Lesson on inclined planes and applications as wedges and screws.
	Wheels, Axles and Pulleys	Simple machines lesson on the wheel and axle and the pulley.

	Gears	Simple machines lesson on the gear.
	Bicycle Investigation	Investigating the use of gears, wheel and axles, pulleys and levers in bicycles. This lesson applies their existing knowledge of simple machines.
	Newton's First Law	Lesson on inertia.
	Newton's Second Law	Lesson on Newton's Second Law.
	Newton's Third Law	Learning to identify unbalanced and balanced forces, and identifying the applying and receiving forces.
	Calculating Net Force	Introduction to calculating net force on objects.
	Earth's Magnetic Field	Introduction to the Earth's magnetic field and compasses.
	Electrostatic Force	A more in-depth look at the causes and effects of electrostatic forces.
	Friction	An in-depth look at the causes and effects of friction and drag.
	Gear Ratio	Gear wheels and problems involving gear ratios.
	Planetary Motion	Smart Lesson exploring how gravity causes planets and satellites to move in orbits.
	Tides	Introduction to how the sun and moon control the tides.
	Ancient Tools and Weapons	A look at some ancient weapons and tools, and the simple machines at the heart of how they work.
	Comparing Robots	This lesson shows how robots all contain simple machines.
	Fact or Friction?	This lesson describes useful friction and unwanted friction.
	Safety Systems	This lesson describes how we use our knowledge of forces to stay safe.
	Sports Science	This lesson discusses how sports science uses our knowledge of forces to improve athletes' abilities.
	A Ramp as a Simple Machine	Quantitative investigation designed to study how a ramp works as an inclined plane.
	Build a Marshmallow Blaster	Quantitative investigation using a home-made marshmallow launcher to study the relationship between mass and acceleration.
	Build an Electroscope	Investigation using a home-made electroscope to investigate static electricity and electrostatic forces.
	Investigating Friction	This investigation will demonstrate friction in action.
	Levers	Comparing the three classes of lever, with an emphasis on qualitative observations and real-life applications.
	Mapping Magnetic Fields	Investigation into the shapes of magnetic fields and the nature of magnetic forces.

Science as a Human Endeavour

Relevant section of the science achievement standard:

By the end of Year 7, students … describe situations where scientific knowledge from different science disciplines and diverse cultures has been used to solve a real-world problem. They explain possible implications of the solution for different groups in society.

Nature and Development of Science

Scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available. (ACSHE119)

Carl Linnaeus	In this lesson, students will learn about the life of Carl Linnaeus and the contributions he made to science.
Identifying Species	In this lesson, students will learn about how scientists determine if two organisms are from the same species or different species.
Exploring Space	Smart Lesson introducing how to get humans to space, and how advances in space missions have provided new evidence about space. Apollo 11, Curiosity, New Horizons and Voyager 1 are also covered.
Indigenous Constellations	Smart Lesson about how Indigenous Australian peoples use constellations in different areas of life, e.g. for navigation and storytelling.
Models of the Solar System	Development of the Geocentric and Heliocentric Models of the Solar System.
Satellites	Smart Lesson introducing satellites and their uses, including in GPS and the International Space Station.
Telescopes	Smart Lesson about how telescopes were developed, including the Hubble Space Telescope.
Science, Tradition and Modern Medicine	This lesson describes the connections between science, tradition and modern medicine.
What is Science?	Smart lesson introducing science and the related sub-fields.

Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures. (ACSHE223)

Sustainable Bush Tucker	This Smart Lesson describes some of the sustainable hunting and gathering techniques used by Australian Aboriginals. This lesson can be used to improve reading comprehension in students.
Indigenous Art using Mixtures	Smart Lesson on how Indigenous Australians used mixtures in their art.
Water Treatment	Smart lesson exploring how water is treated from source to tap. Discusses separation techniques used in the water treatment process.

Calendars and the Solar Year	Smart Lesson about calendars and how they were developed, including a section on Indigenous Australian peoples' calendars.
Indigenous Constellations	Smart Lesson about how Indigenous Australian peoples use constellations in different areas of life, e.g. for navigation and storytelling.
Antarctica, a Shared Continent	This lesson describes the shared scientific community of Antarctica.
Australian Bushfires	A Smart Lesson on Australian bushfires and aboriginal fire-stick farming.
Irrigation	A smart lesson introducing how we water our plants. Goes over the spray and flood irrigation types.
Water Conservation	A smart lesson on how we recycle water and why we do it.
Water Management	This lesson describes the importance of effective water management skills in Australia.
Ancient Tools and Weapons	A look at some ancient weapons and tools, and the simple machines at the heart of how they work.

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. (ACSHE120)

Global Warming	In this lesson students will learn about global warming and what it does to ecosystems.
Introduced and Invasive Species	This lesson teaches what introduced and invasive species are. It explains how invasive species can affect native species and ecosystems.
Invasive Species in Australia	This lesson is about the invasive cane toad and rabbits.
Pollution and Ecosystems	This lesson teaches students about how pollution can affect whole ecosystems. It includes an the example of how pollution affects the Great Barrier Reef.
Saving the Tasmanian Devil	In this lesson students learn about the Tasmanian devil and the disease that threatens it with extinction.
What is Pollution?	This lesson teaches students what pollution is, where it comes from and what it does to living things.
Sustainable Bush Tucker	This Smart Lesson describes some of the sustainable hunting and gathering techniques used by Australian Aboriginals. This lesson can be used to improve reading comprehension in students.
Recycling Sewage	Smart lesson discussing the methods used to treat sewage.
Renewable Energy	This lesson describes the renewable energy options that Australia has available.
The Power of Sunshine	A Smart Lesson introducing some novel applications of solar energy. This lesson can be used to improve reading comprehension in students.
Irrigation	A smart lesson introducing how we water our plants. Goes over the spray and flood irrigation types.

Water Conservation	A smart lesson on how we recycle water and why we do it.
Water Management	This lesson describes the importance of effective water management skills in Australia.

People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity. (ACSHE121)

Invasive Species in Australia	This lesson is about the invasive cane toad and rabbits.
Blood as a Mixture	Smart Lesson on blood, focusing on how it is a mixture. This lesson also looks at the functions of the different components which make up blood.
Indigenous Art using Mixtures	Smart Lesson on how Indigenous Australians used mixtures in their art.
Recycling Sewage	Smart lesson discussing the methods used to treat sewage.
Separation in Food	Smart Lesson on some separation processes used to create specific food products.
Separation in Industries	Smart lesson exploring how separation is used in mining.
Water Treatment	Smart lesson exploring how water is treated from source to tap. Discusses separation techniques used in the water treatment process.
Calendars and the Solar Year	Smart Lesson about calendars and how they were developed, including a section on Indigenous Australian peoples' calendars.
Indigenous Constellations	Smart Lesson about how Indigenous Australian peoples use constellations in different areas of life, e.g. for navigation and storytelling.
Changing Seasons	This lesson describes how seasonal changes affect people in a variety of activities.
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Science, Tradition and Modern Medicine	This lesson describes the connections between science, tradition and modern medicine.
Irrigation	A smart lesson introducing how we water our plants. Goes over the spray and flood irrigation types.
Water Conservation	A smart lesson on how we recycle water and why we do it.
Water Management	This lesson describes the importance of effective water management skills in Australia.
Ancient Tools and Weapons	A look at some ancient weapons and tools, and the simple machines at the heart of how they work.
Comparing Robots	This lesson shows how robots all contain simple machines.
Safety Systems	This lesson describes how we use our knowledge of forces to stay safe.
Sports Science	This lesson discusses how sports science uses our knowledge of forces to improve athletes' abilities.
Careers in Science	Smart lesson detailing the variety of careers that use science.

Science Inquiry Skills

Relevant section of the science achievement standard:

By the end of Year 7, students … identify questions that can be investigated scientifically. They plan fair experimental methods, identifying variables to be changed and measured. They select equipment that improves fairness and accuracy and describe how they considered safety. Students draw on evidence to support their conclusions. They summarise data from different sources, describe trends and refer to the quality of their data when suggesting improvements to their methods. They communicate their ideas, methods and findings using scientific language and appropriate representations.

Questioning and Predicting

Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge. (ACSIS124)

Growing Plants Under Different Conditions	In this investigation, students will design an experiment for testing how plants grow under different conditions.
Candy Crystals	Observational investigation where students create candy crystals.
Chromatography: Separating Colours	Observational investigation where students do paper chromatography.
Filtration	Hypothesis-driven investigation where students compare the use of two different folds of filter paper.
Making a Solar Still	Observational investigation where students build their own solar still as a way to create clean water from plants and dirty water.
Temperature and Dissolving	Observational investigation where students observe how dissolving is affected by the temperature of a solution.
Saturation and Line Graphs	Students practice interpret line graphs containing data on concentrations of solutions. From the graph, they identify the point of saturation.
Modelling Gravity	An experiment where students use ropes to simulate the motion of planets around the Sun, and the Moon around the Earth.
Modelling the Earth, Moon and Sun	An experiment where models of the Earth and Moon are used with a light source to simulate day, night and eclipses.
Using a Pinhole Camera to Calculate Diameter of the Sun	In this investigation, students will use a pinhole camera to observe the sun and estimate its diameter.
Solar Oven	In this investigation, students build a solar oven and use it to heat water.
Turbine Power	This investigation explores how wind and hydro turbines respond to different loads.
Evaporation	This investigation explores the connection between surface area and evaporation.

Make Your Own Aquifer	This investigation explores the formation and extraction of groundwater.
A Ramp as a Simple Machine	Quantitative investigation designed to study how a ramp works as an inclined plane.
Build a Marshmallow Blaster	Quantitative investigation using a home-made marshmallow launcher to study the relationship between mass and acceleration.
Investigating Friction	This investigation will demonstrate friction in action.
Scientific Method	Smart Lesson on the scientific method and how to write a scientific report.
Hypothesising and Predicting	A lesson on how to make a scientific hypothesis and predicting results of experiments.
Introduction to Ethics	A Smart Lesson explaining what ethics is, and how ethics an be influenced by a variety of cultural factors.
Ethics Around the World	Smart Lesson exploring the history of ethics in Europe, India, China, Japan and America.
Different Views	A Smart Lesson exploring how ethics is subjective, and how something can be considered ethical in one culture and unethical in another.
Ethical Issues of Organ Transplants	A Smart Lesson explaining what ethical dilemmas are using organ transplants as examples.
The Ethics of Genetics	A Smart Lesson exploring the ethical dilemma of genetic testing of embryos.

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. (ACSIS125)

Researching Phyla	In this investigation, students will be doing research to compare and contrast two animals from the same phylum.
Collecting Invertebrates in Quadrats	In this investigation, students will collect invertebrates and use them to estimate biodiversity.
Extracting Leaf Pigments	In this investigation, students will extract pigments from plant leaves.
Growing Plants Under Different Conditions	In this investigation, students will design an experiment for testing how plants grow under different conditions.
Measuring Abiotic Factors in Water	In this investigation, students will measure the abiotic factors temperature, pH, salinity and turbidity in three different water samples.
Candy Crystals	Observational investigation where students create candy crystals.
Chromatography: Separating Colours	Observational investigation where students do paper chromatography.
Filtration	Hypothesis-driven investigation where students compare the use of two different folds of filter paper.
Making a Solar Still	Observational investigation where students build their own solar still as a way to create clean water from plants and dirty water.

Separating a Basic Mixture	Investigation where students devise their own method for separating a mixture.
Temperature and Dissolving	Observational investigation where students observe how dissolving is affected by the temperature of a solution.
Making a Pinhole Camera	In this investigation, students will make a pinhole camera that can be used to indirectly observe the Sun.
Using a Pinhole Camera to Calculate Diameter of the Sun	In this investigation, students will use a pinhole camera to observe the sun and estimate its diameter.
Seasons and the Angle of the Sun	In this investigation, students will simulate how solar energy hits different parts of the Earth.
Solar Oven	In this investigation, students build a solar oven and use it to heat water.
Turbine Power	This investigation explores how wind and hydro turbines respond to different loads.
Evaporation	This investigation explores the connection between surface area and evaporation.
Make Your Own Aquifer	This investigation explores the formation and extraction of groundwater.
Weather in a Jar	This investigation explores the factors that lead to cloud and rain formation.
A Ramp as a Simple Machine	Quantitative investigation designed to study how a ramp works as an inclined plane.
Build a Marshmallow Blaster	Quantitative investigation using a home-made marshmallow launcher to study the relationship between mass and acceleration.
Build an Electroscope	Investigation using a home-made electroscope to investigate static electricity and electrostatic forces.
Investigating Friction	This investigation will demonstrate friction in action.
Levers	Comparing the three classes of lever, with an emphasis on qualitative observations and real-life applications.
Mapping Magnetic Fields	Investigation into the shapes of magnetic fields and the nature of magnetic forces.
Safety Equipment	Smart Lesson about the different types of safety equipment and when to use them.
Safety Guidelines	Smart lesson discussing safety instructions for the lab, including what to wear and what to do when things go wrong.
Equipment Types	A Smart Lesson going through basic laboratory equipment and its uses.
Bunsen Burner	A Smart Lesson instructing students on the design and makeup of the Bunsen burner.
Separating Substances and Other Equipment	Introduction to some important pieces of scientific equipment and their uses with a focus on equipment needed to separate mixtures.
Equipment Quiz	A quiz testing the ability of students to name scientific equipment.
Reading the Meniscus	Smart Lesson on the way to read a measurement from a fluid which has a meniscus.
Magnification	How magnification can be calculated and changed and how this relates to the field of view and resolution.
Parts and Function of a Microscope	A Smart Lesson explaining how optical microscopes work and what they are.
Types of Microscopes	A lesson on the different types of microscopes that can be used.
Using a Microscope	How to prepare wet mounts and use a microscope.
Variables	Smart Lesson about independent variables, dependent variables and control variables.
Control Variables and Control Groups	A Smart Lesson on the importance of control variables and control groups, and the importance of using these for results to be meaningful.

Accuracy	Smart Lesson on accuracy and selecting measuring equipment which will give a more accurate result.
Repeatability and Reliability	An introduction to repeatability and reliability and their importance when carrying out experiments.
Validity	Smart Lesson on validity when performing an experiment, and how changing variables can invalidate an experiment.
Fair Tests	Smart Lesson on fair tests and how to control variables.
Sample Size	A Smart Lesson on the importance of large sample sizes in collecting accurate results.
Scientific Method	Smart Lesson on the scientific method and how to write a scientific report.
Observations and Inferences	How to make observations and inferences using qualitative and quantitative methods.
Introduction to Ethics	A Smart Lesson explaining what ethics is, and how ethics an be influenced by a variety of cultural factors.
Ethics Around the World	Smart Lesson exploring the history of ethics in Europe, India, China, Japan and America.
Different Views	A Smart Lesson exploring how ethics is subjective, and how something can be considered ethical in one culture and unethical in another.
Ethical Issues of Organ Transplants	A Smart Lesson explaining what ethical dilemmas are using organ transplants as examples.
The Ethics of Genetics	A Smart Lesson exploring the ethical dilemma of genetic testing of embryos.

Measure and control variables, select equipment appropriate to the task and collect data with accuracy. (ACSIS126)

Growing Plants Under Different Conditions	In this investigation, students will design an experiment for testing how plants grow under different conditions.
Measuring Abiotic Factors in Water	In this investigation, students will measure the abiotic factors temperature, pH, salinity and turbidity in three different water samples.
Filtration	Hypothesis-driven investigation where students compare the use of two different folds of filter paper.
Solar Oven	In this investigation, students build a solar oven and use it to heat water.
Evaporation	This investigation explores the connection between surface area and evaporation.
A Ramp as a Simple Machine	Quantitative investigation designed to study how a ramp works as an inclined plane.
Build a Marshmallow Blaster	Quantitative investigation using a home-made marshmallow launcher to study the relationship between mass and acceleration.
Investigating Friction	This investigation will demonstrate friction in action.
Equipment Types	A Smart Lesson going through basic laboratory equipment and its uses.
Measuring in Science	Smart Lesson on how to read different measuring tools. The tools discussed are rulers, measuring cylinders, protractors, thermometers and scales.
Reading the Meniscus	Smart Lesson on the way to read a measurement from a fluid which has a meniscus.
Measuring Electricity	A lesson describing how to measure voltage, current and resistance using ammeters, voltmeters and multimeters.
Magnification	How magnification can be calculated and changed and how this relates to the field of view and resolution.

Parts and Function of a Microscope	A Smart Lesson explaining how optical microscopes work and what they are.
Types of Microscopes	A lesson on the different types of microscopes that can be used.
Using a Microscope	How to prepare wet mounts and use a microscope.
Variables	Smart Lesson about independent variables, dependent variables and control variables.
Control Variables and Control Groups	A Smart Lesson on the importance of control variables and control groups, and the importance of using these for results to be meaningful.
Accuracy	Smart Lesson on accuracy and selecting measuring equipment which will give a more accurate result.
Repeatability and Reliability	An introduction to repeatability and reliability and their importance when carrying out experiments.
Validity	Smart Lesson on validity when performing an experiment, and how changing variables can invalidate an experiment.
Fair Tests	Smart Lesson on fair tests and how to control variables.
Scientific Method	Smart Lesson on the scientific method and how to write a scientific report.
Hypothesising and Predicting	A lesson on how to make a scientific hypothesis and predicting results of experiments.
Observations and Inferences	How to make observations and inferences using qualitative and quantitative methods.
Organising Data into a Data Table from an Experiment	How to format data tables using scientific conventions, and how to create and input data into data tables.

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. (ACSIS129)

Building Dichotomous Keys	In this investigation students will build a dichotomous key to classify leaves.
Researching Phyla	In this investigation, students will be doing research to compare and contrast two animals from the same phylum.
Using Dichotomous Keys	In this investigation, students will be using a dichotomous key to identify dragons.
Build a Food Web	In this investigation, students will build a food web using a list of species and information about what they eat.
Extracting Leaf Pigments	In this investigation, students will extract pigments from plant leaves.
Growing Plants Under Different Conditions	In this investigation, students will design an experiment for testing how plants grow under different conditions.
Measuring Abiotic Factors in Water	In this investigation, students will measure the abiotic factors temperature, pH, salinity and turbidity in three different water samples.

Graphs and Tables of Mixtures	Students interpret different types of graphs containing data on the contents of various mixtures. The graphs include pie charts, column graphs and tables.
Saturation and Line Graphs	Students practice interpret line graphs containing data on concentrations of solutions. From the graph, they identify the point of saturation.
Solar Oven	In this investigation, students build a solar oven and use it to heat water.
A Ramp as a Simple Machine	Quantitative investigation designed to study how a ramp works as an inclined plane.
Build a Marshmallow Blaster	Quantitative investigation using a home-made marshmallow launcher to study the relationship between mass and acceleration.
Investigating Friction	This investigation will demonstrate friction in action.
Levers	Comparing the three classes of lever, with an emphasis on qualitative observations and real-life applications.
Mapping Magnetic Fields	Investigation into the shapes of magnetic fields and the nature of magnetic forces.
Scientific Method	Smart Lesson on the scientific method and how to write a scientific report.
Observations and Inferences	How to make observations and inferences using qualitative and quantitative methods.
Organising Data into a Data Table from an Experiment	How to format data tables using scientific conventions, and how to create and input data into data tables.
Interpreting Data Tables	Smart Lesson on how to interpret data tables, and the difference between directly proportional and inversely proportional relationships.
Graphs in Science	Smart Lesson on how graphs are used in science.
Bar Graphs	Smart Lesson about bar graphs, and what type of information is best represented in bar graphs.
Line Graphs	Smart Lesson explaining how to make and read a line graph.
Scatter Graphs	Explanation of scatter graphs and lines of best fit.
A Guide for Making Graphs in Excel (Mac Version)	Smart Lesson describing how to make scatter plots, histograms and column graphs in Excel, when using a Mac computer.
A Guide for Making Graphs in Excel (Windows Version)	Smart Lesson describing how to make scatter plots, histograms and column graphs in Excel, when using a Windows computer.
Matching Tables to Graphs	Smart Lesson on whether data should be presented in a table or a graph.
Algebra in Science	Introduction to how algebra is used in science with the examples of calculating net force and using Newton's Second Law.
Rearranging Equations	Introduction on how to rearrange simple algebraic equations.
Choosing Appropriate Units	Practice choosing appropriate units for volumes, distances, energies and speeds.
Units of Distance	Introduction to the SI units used to measure distance, and how to convert between the units.
Units of Energy	Introduction to the SI units used to measure energy, and how to convert between the units.
Units of Speed	Introduction to the SI units used to measure speed, and how to convert between the units.
Units of Volume	Introduction to the SI units used to measure volume, and how to convert between the units.
Food Webs	Interpreting food web diagrams to teach interpretation skills.

Interpreting Diagrams	Exercises on interpreting food chains, flow charts, dichotomous keys and force diagrams.
Water Cycle	Introduction to interpreting diagrams using the water cycle as an example.
Scientific Notation	A Smart Lesson explaining how to write large and small numbers in scientific notation.
Scientific Figures	Smart Lesson describing how to write numbers to significant figures, and how to identify significant figures.

Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions based on evidence. (ACSIS130)

Building Dichotomous Keys	In this investigation students will build a dichotomous key to classify leaves.
Researching Phyla	In this investigation, students will be doing research to compare and contrast two animals from the same phylum.
Build a Food Web	In this investigation, students will build a food web using a list of species and information about what they eat.
Collecting Invertebrates in Quadrats	In this investigation, students will collect invertebrates and use them to estimate biodiversity.
Extracting Leaf Pigments	In this investigation, students will extract pigments from plant leaves.
Growing Plants Under Different Conditions	In this investigation, students will design an experiment for testing how plants grow under different conditions.
Measuring Abiotic Factors in Water	In this investigation, students will measure the abiotic factors temperature, pH, salinity and turbidity in three different water samples.
Marine Ecosystems and Overfishing	Data is presented on overfishing to help students learn to read column graphs, pie charts and tables.
Candy Crystals	Observational investigation where students create candy crystals.
Chromatography: Separating Colours	Observational investigation where students do paper chromatography.
Filtration	Hypothesis-driven investigation where students compare the use of two different folds of filter paper.
Making a Solar Still	Observational investigation where students build their own solar still as a way to create clean water from plants and dirty water.
Separating a Basic Mixture	Investigation where students devise their own method for separating a mixture.
Temperature and Dissolving	Observational investigation where students observe how dissolving is affected by the temperature of a solution.
Graphs and Tables of Mixtures	Students interpret different types of graphs containing data on the contents of various mixtures. The graphs include pie charts, column graphs and tables.
Saturation and Line Graphs	Students practice interpret line graphs containing data on concentrations of solutions. From the graph, they identify the point of saturation.
Making a Sundial	In this investigation, students will make a sundial.
Modelling Gravity	An experiment where students use ropes to simulate the motion of planets around the Sun, and the Moon around the Earth.
Modelling the Earth, Moon and Sun	An experiment where models of the Earth and Moon are used with a light source to simulate day, night and eclipses.

Making a Pinhole Camera	In this investigation, students will make a pinhole camera that can be used to indirectly observe the Sun.
Using a Pinhole Camera to Calculate Diameter of the Sun	In this investigation, students will use a pinhole camera to observe the sun and estimate its diameter.
Seasons and the Angle of the Sun	In this investigation, students will simulate how solar energy hits different parts of the Earth.
Solar Oven	In this investigation, students build a solar oven and use it to heat water.
Turbine Power	This investigation explores how wind and hydro turbines respond to different loads.
Choosing Renewables	This Smart Lesson presents data on renewable and non-renewable energy use for students to interpret.
Evaporation	This investigation explores the connection between surface area and evaporation.
Make Your Own Aquifer	This investigation explores the formation and extraction of groundwater.
Weather in a Jar	This investigation explores the factors that lead to cloud and rain formation.
Reading a Weather Map	This Smart Lesson teaches students how to identify key features on weather maps, including pressure and temperature.
A Ramp as a Simple Machine	Quantitative investigation designed to study how a ramp works as an inclined plane.
Build a Marshmallow Blaster	Quantitative investigation using a home-made marshmallow launcher to study the relationship between mass and acceleration.
Build an Electroscope	Investigation using a home-made electroscope to investigate static electricity and electrostatic forces.
Investigating Friction	This investigation will demonstrate friction in action.
Levers	Comparing the three classes of lever, with an emphasis on qualitative observations and real-life applications.
Mapping Magnetic Fields	Investigation into the shapes of magnetic fields and the nature of magnetic forces.
Scientific Method	Smart Lesson on the scientific method and how to write a scientific report.
Observations and Inferences	How to make observations and inferences using qualitative and quantitative methods.
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Interpreting Data Tables	Smart Lesson on how to interpret data tables, and the difference between directly proportional and inversely proportional relationships.
Graphs in Science	Smart Lesson on how graphs are used in science.
Bar Graphs	Smart Lesson about bar graphs, and what type of information is best represented in bar graphs.
Line Graphs	Smart Lesson explaining how to make and read a line graph.
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Food Webs	Interpreting food web diagrams to teach interpretation skills.
Interpreting Diagrams	Exercises on interpreting food chains, flow charts, dichotomous keys and force diagrams.
Water Cycle	Introduction to interpreting diagrams using the water cycle as an example.

| Evaluating in Science | A lesson explaining how to evaluate experimental results. |

Evaluating

Reflect on scientific investigations including evaluating the quality of the data collected, and identifying improvements. (ACSIS131)

Building Dichotomous Keys	In this investigation students will build a dichotomous key to classify leaves.
Classifying Leaves	In this investigation, students will classify leaves into groups based on their shape.
Using Dichotomous Keys	In this investigation, students will be using a dichotomous key to identify dragons.
Build a Food Web	In this investigation, students will build a food web using a list of species and information about what they eat.
Collecting Invertebrates in Quadrats	In this investigation, students will collect invertebrates and use them to estimate biodiversity.
Growing Plants Under Different Conditions	In this investigation, students will design an experiment for testing how plants grow under different conditions.
Measuring Abiotic Factors in Water	In this investigation, students will measure the abiotic factors temperature, pH, salinity and turbidity in three different water samples.
Candy Crystals	Observational investigation where students create candy crystals.
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Temperature and Dissolving	Observational investigation where students observe how dissolving is affected by the temperature of a solution.
Modelling Gravity	An experiment where students use ropes to simulate the motion of planets around the Sun, and the Moon around the Earth.
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Making a Pinhole Camera	In this investigation, students will make a pinhole camera that can be used to indirectly observe the Sun.
Using a Pinhole Camera to Calculate Diameter of the Sun	In this investigation, students will use a pinhole camera to observe the sun and estimate its diameter.
Seasons and the Angle of the Sun	In this investigation, students will simulate how solar energy hits different parts of the Earth.
Solar Oven	In this investigation, students build a solar oven and use it to heat water.
Turbine Power	This investigation explores how wind and hydro turbines respond to different loads.
Evaporation	This investigation explores the connection between surface area and evaporation.

Make Your Own Aquifer	This investigation explores the formation and extraction of groundwater.
Weather in a Jar	This investigation explores the factors that lead to cloud and rain formation.
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Build an Electroscope	Investigation using a home-made electroscope to investigate static electricity and electrostatic forces.
Investigating Friction	This investigation will demonstrate friction in action.
Measuring in Science	Smart Lesson on how to read different measuring tools. The tools discussed are rulers, measuring cylinders, protractors, thermometers and scales.
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Variables	Smart Lesson about independent variables, dependent variables and control variables.
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Accuracy	Smart Lesson on accuracy and selecting measuring equipment which will give a more accurate result.
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Validity	Smart Lesson on validity when performing an experiment, and how changing variables can invalidate an experiment.
Fair Tests	Smart Lesson on fair tests and how to control variables.
Sample Size	A Smart Lesson on the importance of large sample sizes in collecting accurate results.
Scientific Method	Smart Lesson on the scientific method and how to write a scientific report.
Observations and Inferences	How to make observations and inferences using qualitative and quantitative methods.
Evaluating in Science	A lesson explaining how to evaluate experimental results.

Use scientific knowledge and findings from investigations to evaluate claims based on evidence. (ACSIS132)

Graphs and Tables of Mixtures	Students interpret different types of graphs containing data on the contents of various mixtures. The graphs include pie charts, column graphs and tables.
Modelling Gravity	An experiment where students use ropes to simulate the motion of planets around the Sun, and the Moon around the Earth.
Using a Pinhole Camera to Calculate Diameter of the Sun	In this investigation, students will use a pinhole camera to observe the sun and estimate its diameter.
Choosing Renewables	This Smart Lesson presents data on renewable and non-renewable energy use for students to interpret.
Control Variables and Control Groups	A Smart Lesson on the importance of control variables and control groups, and the importance of using these for results to be meaningful.
Repeatability and Reliability	An introduction to repeatability and reliability and their importance when carrying out experiments.

Validity	Smart Lesson on validity when performing an experiment, and how changing variables can invalidate an experiment.
Fair Tests	Smart Lesson on fair tests and how to control variables.
Sample Size	A Smart Lesson on the importance of large sample sizes in collecting accurate results.
Scientific Method	Smart Lesson on the scientific method and how to write a scientific report.
Evaluating in Science	A lesson explaining how to evaluate experimental results.

Communicating

Communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate. (ACSIS133)

Researching Phyla	In this investigation, students will be doing research to compare and contrast two animals from the same phylum.
Growing Plants Under Different Conditions	In this investigation, students will design an experiment for testing how plants grow under different conditions.
Scientific Method	Smart Lesson on the scientific method and how to write a scientific report.
Graphs in Science	Smart Lesson on how graphs are used in science.
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