

Australian Curriculum - Year 8

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.

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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 8, students ... analyse the relationship between structure and function at cell, organ and body system levels.

Standards:

Cells are the basic units of living things; they have specialised structures and functions. ([ACSSU149](#))

 What is a Cell?	An introduction to cells.
 Size of Cells	This introduces the units and incredibly small size of cells.
 Parts and Function of a Microscope	How microscopes work and what they are.
 Types of Microscopes	A lesson on the different types of microscopes that can be used.
 Magnification	How magnification can be calculated and changed and how this relates to the field of view and resolution.
 Using a Microscope	How to use a microscope.
 Introduction to Types of Cells: Pond Water Investigation	An introductory lesson on the different types of cells - prokaryotic and eukaryotic - structured as an investigation into the organisms found in pond water.
 Prokaryotic Cells	An introductory Smart Lesson on prokaryotic cells and bacteria.

	Bacterial Cell Structure	The organelles found in prokaryotes such as bacteria.
	Eukaryotic Cells	An introductory Smart Lesson on eukaryotic cells and the organelles present in all eukaryotic cells.
	Animal Cells	The organelles found in animal cells.
	Plant Cell Structure	The organelles found in plant cells.
	Fungal Cell Structure	An introduction to the structure of fungal cells.
	Cell Division in Bacteria	Smart Lesson introducing binary fission in bacteria.
	Cell Division in Humans	Smart Lesson introducing the concept of cell division, and the difference between mitosis and meiosis.
	Specialised Animal Cells	Smart Lesson about specialised animal cells, and how the structure of the cells relates to their function.
	Specialised Plant Cells	Smart Lesson about specialised plant cells, and how the structure of the cells relates to their function.
	Levels of Organisation	Smart Lesson about the various levels of organisation in the human body, from the smallest cells up to organs.
	Animal vs. Plant Cells	Comparing animal and plant cell organelles and structure.
	Diffusion	A lesson explaining the process of diffusion and the surface area:volume ratio.
	Diffusion and Cell Size	Smart Lesson about diffusion and the surface area to volume ratio and why these are important in determining cell size.
	Prokaryotic vs. Eukaryotic	Comparing prokaryotes and eukaryotes.
	Antibiotics	Smart Lesson introducing antibiotics and the problem of antibiotic resistance.
	Cell Theory	Smart Lesson about the cell theory and some of the discoveries that led to its development.
	Disease Treatment and Control	Smart Lesson about ways to control the spread of infectious diseases by using good hygiene practices.
	History of Microscopes	Smart Lesson about microscopes and the history of their development.
	Stem Cells	Smart Lesson introducing embryonic and adult stem cells and their applications in medicine.
	Vaccination	Smart Lesson about how vaccines work and why it is so important to get vaccinated.
	Jelly Cells	Experiment where jelly and lollies are used to make a model of a cell.
	Pond Critters	Experiment where pond water is collected for students to examine under a microscope.
	Preparing and Observing Cells	Experiment where onion and cheek cells are collected and prepared to practice proper microscope and slide preparation techniques.
	Parts and Functions of a Microscope	How microscopes work and what they are.

 Magnification and Resolution	How magnification can be calculated and changed and how this relates to the field of view and resolution.
 How to Use a Microscope	Instructions on how to properly use a microscope.
 Using a Microscope	Investigation in which students learn how to use a microscope correctly by preparing a wet mount of a newspaper cutting containing a lowercase "e" and observing it under the microscope.
 Food Safety and Salmonella	In this lesson, students interpret data on how temperature affects the rate of cell division in salmonella. From this, they draw conclusions about how to safely store food.

Multi-cellular organisms contain systems of organs carrying out specialised functions that enable them to survive and reproduce.

(ACSSU150)

 Introduction to Body Systems	This Smart Lesson explores three key ideas: comparing unicellular to multicellular organisms, how structure relates to function, and what body systems are.
 Digestive System as a Whole	A lesson introducing and explaining the different structures of the digestive system and describing how each function.
 Food Groups	A lesson explaining the three different food groups and what they consist of.
 Mouth and Oesophagus	A lesson describing the first start of the digestive system: the mouth, oesophagus and the sphincter. The difference between mechanical and chemical digestion is also explained.
 Stomach and Small Intestine	A lesson explaining how digestion occurs in the stomach and the small intestines.
 Large Intestine and Rectum	A lesson explaining how digestion takes place in the large intestines and rectum.
 Comparing Digestion in Other Animals	A lesson comparing and contrasting the digestive systems of koalas, cows, dingoes and humans.
 Introduction to Respiration	A Smart Lesson introducing the different structures of the respiratory system and their functions.
 Breathing	A lesson explaining the muscles responsible for breathing and the path air takes during inhalation and exhalation.
 Gas Exchange	A Smart Lesson explaining where exchange of oxygen and carbon dioxide takes place within the respiratory system.
 Respiration in Cells	A lesson explaining why cells need oxygen and what they use it for.
 Respiration Compare and Contrast	A lesson comparing and contrasting the respiratory systems of fish, insects and humans.
 Introduction to the Circulatory System	A lesson introducing and explaining the circulatory system and how the heart works.

	Heart	A lesson on the parts of the heart and where blood flows through the heart and around the body.
	Blood Vessels	A lesson explaining the different types of blood vessels, including how to take a pulse.
	Blood	A Smart Lesson introducing the different components that make up blood.
	Introduction to the Excretory System	A Smart Lesson introducing the excretory system and the structures involved.
	Excretory Organs	Smart Lesson going through the various excretory organs, such as the kidneys, liver, lungs and skin.
	The Kidneys & Urine Production	Smart Lesson explaining how urine is produced in the kidneys.
	Kidney Disease	Smart Lesson explaining UTIs and kidney stones.
	Musculoskeletal System	A Smart Lesson introducing the musculoskeletal system and its components.
	Bones & Joints	A Smart Lesson introducing ossification, the cells involved in bone growth and remodelling, osteoporosis and the many different types of joints within the human body.
	Muscles	A Smart Lesson introducing the three different muscle types. It discusses the types of movements muscles produce, and what the main muscles of the body are.
	Injuries	A Smart Lesson introducing the different types of bone fractures, muscle injuries and tennis and golfers elbow.
	Puberty	A lesson introducing and explaining puberty.
	Male Reproduction	A lesson introducing and explaining the male reproductive system.
	Female Reproduction	A lesson introducing and explaining the female reproductive system.
	Pregnancy	A lesson introducing and explaining pregnancy.
	Birth	A lesson introducing and explaining the birth process in humans.
	Sexual Reproduction in Animals	A lesson introducing and explaining sexual reproduction in animals.
	Asexual Reproduction in Animals	A lesson introducing and explaining asexual reproduction in animals.
	Sexual Reproduction in Plants	A lesson introducing and explaining sexual reproduction in plants.
	Pollination	A lesson explaining pollination and discussing why plants use it for reproductive purposes.
	Seed Dispersal & Germination	A lesson explaining seed dispersal and discussing why plants use it for reproductive purposes.
	Asexual Reproduction in Plants	A lesson introducing and explaining asexual reproduction in plants.
	Photosynthesis	Smart lesson on photosynthesis.
	Plant Systems	A Smart Lesson explaining the shoot and root systems of plants, as well as xylem and phloem.
	Adapting to Extreme Climates	Lesson discussing how humans adapt to different climates using homeostasis.

 Diffusion	A lesson explaining the process of diffusion and the surface area:volume ratio.
 Diffusion and Body Systems	Smart Lesson on how diffusion operates within the human body.
 Exercise and the Body	Smart Lesson on how exercise affects the body, and how the body responds to physical exertion.
 Stress Effects on the Body	Smart Lesson on how stress affects the body, and how the body responds to stressful conditions.
 Contraception	A lesson introducing and explaining the different methods of contraception.
 Ethical Issues of Organ Transplant	A Smart Lesson explaining what ethical dilemmas are, using organ transplants as examples.
 Infertility	A lesson explaining infertility and the different reproductive techniques that are available.
 Maple Syrup	A Smart Lesson explaining where maple syrup comes from.
 Organ Transplants	A Smart Lesson explaining what organ transplantations are.
 Plant Cloning	A Smart Lesson introducing plant and gene cloning and its use in growing crops.
 Cross Pollination	Investigation into how plants in the school garden reproduce.
 First Aid and Body Systems	Practical lesson in which students learn about basic first aid.
 Flower Dissection	This lesson takes teachers and students through a dissection of a flower.
 Heart Dissection	This lesson takes teachers and students through a dissection of a heart.
 Ancient Anatomy	In this lesson, students read a passage about the Ancient Egyptian's understanding of human anatomy. The lesson is designed to test the students' reading comprehension.
 Relative Heart Size	In this lesson, students interpret data on the relative heart size in different species. They explore links between life style and heart size.

Chemical Sciences

Relevant section of the science achievement standard:

By the end of Year 8, students compare physical and chemical changes and use the particle model to explain and predict the properties and behaviours of substances.

Standards:

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

 What is Matter?	This lesson provides a brief introduction to matter.
 States of Matter	This lesson provides a brief introduction to solids, liquids and gases.
 Particles	This lesson provides an introduction to particles, energy state and bond strength. It is a useful lesson for introducing students to key concepts behind the particle model of matter.
 Solids	This lesson explains how the properties of solids are a result of the behaviour of their particles.
 Liquids	This lesson explains how the properties of liquids are a result of the behaviour of their particles.
 Gases	This lesson explains how the properties of gases are a result of the behaviour of their particles.
 Particle Model of Matter	This lesson draws together information from the previous lessons to explain the particle model of matter. It is a good lesson for revising the particle model of matter after having been taught it in class.
 Changing State	This lesson provides a brief introduction to the concept that substances can change their state.
 Melting and Freezing	This lesson provides an explanation of melting and freezing, including how the behaviour and energy state of particles changes.
 Boiling, Evaporation and Condensation	This lesson provides an explanation of boiling, evaporation and condensation, including how the behaviour and energy state of particles changes as substances change state.
 Sublimation and Deposition	This lesson defines sublimation and deposition and provides several examples of both changes of state.
 Temperature and Changing State	This lesson focuses on explaining the relatively advanced concept that the temperature of a substance does not change while it is changing its state.
 Density	This lesson defines and explains how to calculate density.
 Mass and Volume	This lesson defines and explains how to measure mass and volume.



	<u>Pressure</u>	This lesson defines pressure and explains how the pressure a gas exerts on its container can change with volume and temperature.
	<u>Energy in Matter</u>	This lesson explains how energy is transferred through and interacts with matter.
	<u>Newtonian and Non-Newtonian Fluids</u>	This lesson explains what non-Newtonian fluids are.
	<u>Heat Pumps and Refrigerators</u>	In this lesson, students will learn how heat pumps and refrigerators use changes in temperature, pressure and state to heat a house and chill food.
	<u>States of Matter in Space</u>	In this lesson, students will learn how the extreme temperatures of different planets and moons affects matter and how this affects their weather.
	<u>The Water Cycle and Weather</u>	In this lesson, students will learn how state changes affect the water cycle and weather.
	<u>When Water Freezes</u>	In this lesson, students will learn how changing state affects density and how water is an important exception to the rule.
	<u>Building a Density Tower</u>	In this investigation students will build a density tower and use it to compare the densities of different objects.
	<u>Building a Steam Engine</u>	In this investigation, students will build a simple steam engine called a Hero engine.
	<u>Making Ice Cream</u>	In this investigation students will learn how state changes can be used to make tasty treats, like ice cream!
	<u>Observing Atmospheric Pressure</u>	In this investigation, students will observe how air pressure pushes upon the objects on Earth.
	<u>What is the Matter?</u>	This Science Comprehension lesson follows the state of water as it travels from the chilly depths of the temperature scale to the scorching heights.

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

	<u>Introduction to Elements, Compounds and Mixtures</u>	Introduction to the simple concepts of elements, compounds and mixtures.
	<u>Atoms</u>	Introduction to atoms, atomic models and sub-atomic particles.
	<u>Elements</u>	Introduction to elements, the Periodic Table and the organisation of the elements.
	<u>Metals, Non-Metals and Metalloids</u>	Introduction to the three groups of elements - metals, metalloids and non-metals.
	<u>First 10 Elements</u>	Introduction to the first 10 elements of the periodic table.
	<u>Quiz- First 10 Elements (Name to Symbol)</u>	Students identify the correct symbol for the first 10 elements in the Periodic Table.

	Quiz- First 10 Elements (Symbol to Name)	Students identify what element a symbol represents, for the first 10 elements in the Periodic Table.
	Compounds	Introduction to compounds and how they relate to mixtures and elements.
	Molecules	Introduction to molecules and lattices, and how they relate to compounds.
	Chemical Formula	Introduction to chemical formulas and writing formulas for elements and compounds.
	Chemical Bonding	Discussion of ions and how elements bond to make compounds and molecules.
	The Periodic Table	A history of the periodic table.
	Carbon Chemistry	Carbon and the many useful allotropes of carbon.
	Discovering Elements	A history of the discovery of several notable elements.
	Marie Curie and Radioactivity	Introduction to radioactivity, and the history of Marie Curie's discoveries.
	Materials Science	A history of useful materials, from the Stone Age to modern times.
	Comparing Properties	In this investigation, students compare the different properties of metals, non-metals and metalloids.
	Flame Test	In this investigation, students observe the different coloured flames produced by different elements.
	Indirect Observations	In this investigation, students compare direct and indirect observations.
	Making Models	In this investigation, students make models of elements, compounds and molecules.

Chemical change involves substances reacting to form new substances. [\(ACSSU225\)](#)

	Physical Properties	Smart Lesson on physical properties of substances.
	Physical Change	Smart Lesson on the attributes of physical changes.
	Chemical Reactions	Smart Lesson on the characteristics of chemical reactions.
	Writing Chemical Reactions	Smart Lesson on how to write basic word equations to represent chemical reactions.
	Chemical Properties	Smart Lesson on chemical properties of substances.
	Using Substances Based on their Properties	Smart Lesson about finding uses for substances based on their properties.
	Writing Symbol Equations	Lesson on writing symbol equations using chemical formulas.
	Alchemy	Smart Lesson exploring alchemy and its contributions to modern chemistry.
	Recycling	Lesson on recycling, the physical changes that occur during recycling and why we recycle.



[Synthetic Materials](#)

Lesson on fabrics, both natural and synthetic, with some understanding of the chemistry involved in making fabrics.

[Working in Chemistry](#)

Lesson on some of the various occupations that use chemistry.

[Making Recycled Paper](#)

In this experiment, students make recycled paper through a series of physical changes.

[Observing Chemical Reactions](#)

In this experiment, students make observations of some important chemical reactions.

[Observing Reactions with Fire](#)

In this experiment, students observe the reactions that occur when substances are burned in oxygen.

[Rusting in Different Environments](#)

In this experiment, students rust nails over a period of time and then measure their change in weight to understand different reaction conditions.

Earth and Space Sciences

Relevant section of the science achievement standard:

By the end of Year 8, students ... compare processes of rock formation, including the timescales involved.

Standards:

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

[Earth's Structure](#)

Explanation of the layers of the Earth.

[Earth Processes](#)

Introduction to geological time, pressure and heat within the Earth.

[Weathering and Erosion](#)

Explanation of how erosion breaks rocks down.

[Introduction to Minerals](#)

Explanation of the five criteria which a substance must meet to be classified as a mineral.

[Identifying Minerals](#)

Explanation of how we use colour, lustre, density, cleavage and hardness to classify and identify minerals.

[Igneous Rocks](#)

Explanation of how igneous rocks form and the differences between intrusive and extrusive rocks.

[Sedimentary Rocks](#)

Introduction to the formation of sedimentary rocks and the difference between clastic, crystalline and organic sedimentary rocks.

	<u>Metamorphic Rocks</u>	Explanation of how metamorphic rocks form.
	<u>The Rock Cycle</u>	Explanation of the rock cycle.
	<u>Australian Landforms formed by Physical Weathering, Erosion and Sedimentation</u>	A tour through Australian landforms and landscapes that have been formed through physical weathering, erosion and sedimentation.
	<u>Australian Landforms formed by Volcanism and Chemical Weathering</u>	A tour through Australian landforms and landscapes that have been formed through volcanism and chemical weathering.
	<u>Dissecting the Earth</u>	A journey to the centre of the Earth, taking a special look at the minerals that make up the Earth's layers.
	<u>Geological Time</u>	The concept of deep time and the Geological Timescale.
	<u>Australian Fossils</u>	Smart Lesson on palaeontology and fossils, with a focus on the Ediacaran biota, fish of Gogo Station and dinosaurs of Winton.
	<u>Martian Geology</u>	Smart Lesson on the geology and history of Mars.
	<u>Minerals and Rocks as Resources</u>	Explanation of how rocks and minerals are used as resources.
	<u>Mining and Minerals Exploration</u>	Smart Lesson on how coal and uranium are mined in Australia, with an emphasis on how geologists find these resources.
	<u>Volcanology</u>	Smart Lesson on volcanoes and how scientists study them.
	<u>Build a Geological Timescale</u>	In this investigation, students will build a geological timescale to understand the age of the Earth and everything in it.
	<u>Build a Stratigraphic Column</u>	In this investigation, students will build a stratigraphic column to understand how geologists use these columns to study the Earth.
	<u>Cooling Crystals</u>	In this investigation, students will grow crystals.
	<u>Simulating Erosion</u>	In this investigation, students will simulate erosion to understand this essential process.
	<u>Baked Rocks in the Lachlan Fold Belt</u>	Science Comprehension lesson about the Lachlan Fold Belt, a metamorphic rock structure.
	<u>Hot Rocks of the Cosgrove Hotspot Track</u>	Science Comprehension lesson about the Cosgrove Hotspot Track, a chain of extinct volcanoes.
	<u>Zircons are Forever</u>	Science Comprehension lesson about zircons, a type of durable rock.
	<u>Comparing Minerals</u>	Lesson presents data on different minerals and their properties for students to interpret.

Physical Sciences

Relevant section of the science achievement standard:

By the end of Year 8, students ... identify different forms of energy and describe how energy transfers and transformations cause change in simple systems.

Standards:

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

	<u>What is Energy?</u>	A quick introduction to energy.
	<u>Active Energy</u>	Introduces the types of kinetic energy.
	<u>Stored Energy</u>	Introduces the types of potential energy.
	<u>Identifying KE or PE</u>	Exercises in identifying the types of energy present in a given situation.
	<u>Units of Energy</u>	Introduction to the SI units used to measure energy.
	<u>Converting between Joules (J) and Kilojoules (kJ)</u>	Practice of kilojoule to joule conversions.
	<u>Converting between Kilojoules (kJ) and Megajoules (MJ)</u>	Practice converting kilojoules to megajoules.
	<u>Law of Conservation of Energy</u>	An introduction to the Law of Conservation of Energy.
	<u>Introduction to Heat Transfer</u>	Introduction to the processes by which heat moves.
	<u>Conductors and Insulators</u>	Introduction to conductors and insulators with some common examples.
	<u>Energy Transformations</u>	Examples of energy being converted from one form to another.
	<u>Displaying Energy Transformations</u>	Energy flow charts and Sankey diagrams.
	<u>Energy Transformation and Food</u>	How our bodies use the energy in food and nutrition information panels.
	<u>Useful and Wasted Energy</u>	Discussing waste energy created in energy transformations.
	<u>Electricity</u>	An overview of electricity. This Smart Lesson covers current, resistance and voltage, as well as series and parallel circuits.

 Electric Circuits	Introduction to energy transfer in electric circuits and symbols of common circuit components.
 Current	An explanation of electrical current and ammeters.
 Resistance	Introduction to resistance in circuit components and wires.
 Voltage	Introduction to voltage, voltmeters and voltage drops.
 Introduction to Ohm's Law	Introduction to how current, resistance and voltage are related through Ohm's Law.
 Batteries	Introduction to batteries with a focus on the difference between wet cell and dry cell batteries.
 Conductors and Insulators	An explanation of conductors and insulators, and how they are used in circuits.
 Circuits in Series	Introduction to series circuits with a focus on current and voltage across circuit components.
 Circuits in Parallel	Introduction to parallel circuits with an explanation of how current and voltage act in these circuits.
 Circuits Comparison	Smart Lesson comparing series and parallel circuits with a focus on lightbulb brightness and switch usage.
 Cogeneration and Engines	Internal and external combustion engines.
 Energy Calculations	Calculating kinetic energy and gravitational potential energy.
 Qualitative and Quantitative Data	Qualitative and quantitative methods for measuring energy.
 Cars of the Future	Discussing how cars are designed to transfer energy, and modern designs that use clean energy and energy efficiency.
 Energy Efficient Houses	Smart Lesson on how houses can be designed to minimise heat transfer, making them more energy efficient.
 The Development of Flight	Discussing the history of airplanes, and their evolution in design to modern-day planes that are more energy efficient.
 The Power Grid and You	Discussing how the power grid takes energy from power stations to the home.
 Battery Voltages	An investigation where students measure the voltages on a range of batteries and compare this to the advertised voltages.
 Bouncy Balls and Energy Efficiency	Investigation on energy transformations and efficiency in bouncy balls.
 Building a Solar Oven	Investigation on constructing a solar oven to heat water.
 Building Circuits	Investigation into lightbulbs in series and parallel circuits.
 Energy in Skate Parks	Investigation into the relationship between mass and gravitational potential energy using the PhET skate park simulation.
 Energy Transformations	An investigation into the energy transformations which occur in four different scenarios.

[Investigating Heat Energy](#)

An investigation into the effectiveness of different materials as cups by testing their heat conduction abilities.

[Ohm's Law](#)

Investigation into Ohm's Law in a simple circuit.

[Resistance](#)

An investigation where students compare the measured resistance for a number of resistors to the resistance advertised by the resistors' coloured bands.

[Rube Goldberg Machine](#)

An investigation into the energy transformations and transfers that take place in Rube Goldberg machines.

[Static Electricity](#)

An investigation into static electricity and how it can be used to levitate objects.

Science as a Human Endeavour

Relevant section of the science achievement standard:

By the end of Year 8, students ... examine the different science knowledge used in occupations. They explain how evidence has led to an improved understanding of a scientific idea and describe situations in which scientists collaborated to generate solutions to contemporary problems. They reflect on implications of these solutions 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. ([ACSHE134](#))

Antibiotics	Smart Lesson introducing antibiotics and the problem of antibiotic resistance.
Cell Theory	Smart Lesson about the cell theory and some of the discoveries that led to its development.
Disease Treatment and Control	Smart Lesson about ways to control the spread of infectious diseases by using good hygiene practices.
History of Microscopes	Smart Lesson about microscopes and the history of their development.
Stem Cells	Smart Lesson introducing embryonic and adult stem cells and their applications in medicine.
Vaccination	Smart Lesson about how vaccines work and why it is so important to get vaccinated.
Ancient Anatomy	In this lesson, students read a passage about the Ancient Egyptian's understanding of human anatomy. The lesson is designed to test the students' reading comprehension.
Carbon Chemistry	Carbon and the many useful allotropes of carbon.
Discovering Elements	A history of the discovery of several notable elements.
Marie Curie and Radioactivity	Introduction to radioactivity, and the history of Marie Curie's discoveries.
Materials Science	A history of useful materials, from the Stone Age to modern times.
Alchemy	Smart Lesson exploring alchemy and its contributions to modern chemistry.
Martian Geology	Smart Lesson on the geology and history of Mars.
The Development of Flight	Discussing the history of airplanes, and their evolution in design to modern-day planes that are more energy efficient.
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. ([ACSH226](#))

Cell Theory	Smart Lesson about the cell theory and some of the discoveries that led to its development.
History of Microscopes	Smart Lesson about microscopes and the history of their development.
Stem Cells	Smart Lesson introducing embryonic and adult stem cells and their applications in medicine.
Vaccination	Smart Lesson about how vaccines work and why it is so important to get vaccinated.
Contraception	A lesson introducing and explaining the different methods of contraception.
Infertility	A lesson explaining infertility and the different reproductive techniques that are available.
Organ Transplants	A Smart Lesson explaining what organ transplants are.
Ancient Anatomy	In this lesson, students read a passage about the Ancient Egyptian's understanding of human anatomy. The lesson is designed to test the students' reading comprehension.
Minerals and Rocks as Resources	Explanation of how rocks and minerals are used as resources.
Mining and Minerals Exploration	Smart Lesson on how coal and uranium are mined in Australia, with an emphasis on how geologists find these resources.

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](#))

Stem Cells	Smart Lesson introducing embryonic and adult stem cells and their applications in medicine.
Vaccination	Smart Lesson about how vaccines work and why it is so important to get vaccinated.
Ethical Issues of Organ Transplant	A Smart Lesson explaining what ethical dilemmas are, using organ transplants as examples.
Recycling	Lesson on recycling, the physical changes that occur during recycling and why we recycle.
Synthetic Materials	Lesson on fabrics, both natural and synthetic, with some understanding of the chemistry involved in making fabrics.
Cars of the Future	Discussing how cars are designed to transfer energy, and modern designs that use clean energy and energy efficiency.
Energy Efficient Houses	Smart Lesson on how houses can be designed to minimise heat transfer, making them more energy efficient.



[The Development of Flight](#)

Discussing the history of airplanes, and their evolution in design to modern-day planes that are more energy efficient.

[The Power Grid and You](#)

Discussing how the power grid takes energy from power stations to the home.

People use science understanding and skills in their occupations and these have influenced the development of practices in areas of human activity. (ACSH136)

[Antibiotics](#)

Smart Lesson introducing antibiotics and the problem of antibiotic resistance.

[Disease Treatment and Control](#)

Smart Lesson about ways to control the spread of infectious diseases by using good hygiene practices.

[Stem Cells](#)

Smart Lesson introducing embryonic and adult stem cells and their applications in medicine.

[Vaccination](#)

Smart Lesson about how vaccines work and why it is so important to get vaccinated.

[Maple Syrup](#)

A Smart Lesson explaining where maple syrup comes from.

[Organ Transplants](#)

A Smart Lesson explaining what organ transplants are.

[Plant Cloning](#)

A Smart Lesson introducing plant and gene cloning and its use in growing crops.

[Heat Pumps and Refrigerators](#)

In this lesson, students will learn how heat pumps and refrigerators use changes in temperature, pressure and state to heat a house and chill food.

[The Water Cycle and Weather](#)

In this lesson, students will learn how state changes affect the water cycle and weather.

[Carbon Chemistry](#)

Carbon and the many useful allotropes of carbon.

[Materials Science](#)

A history of useful materials, from the Stone Age to modern times.

[Synthetic Materials](#)

Lesson on fabrics, both natural and synthetic, with some understanding of the chemistry involved in making fabrics.

[Working in Chemistry](#)

Lesson on some of the various occupations that use chemistry.

[Volcanology](#)

Smart Lesson on volcanoes and how scientists study them.

[Cars of the Future](#)

Discussing how cars are designed to transfer energy, and modern designs that use clean energy and energy efficiency.

[Energy Efficient Houses](#)

Smart Lesson on how houses can be designed to minimise heat transfer, making them more energy efficient.

[The Power Grid and You](#)

Discussing how the power grid takes energy from power stations to the home.

[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 and construct questions and problems that they can investigate scientifically. They consider safety and ethics when planning investigations, including designing field or experimental methods. They identify variables to be changed, measured and controlled. Students construct representations of their data to reveal and analyse patterns and trends, and use these when justifying their conclusions. They explain how modifications to methods could improve the quality of their data and apply their own scientific knowledge and investigation findings to evaluate claims made by others. They use appropriate language and representations to communicate science ideas, methods and findings in a range of text types.

Questioning and Predicting

Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge. ([ACSSIS139](#))

Jelly Cells	Experiment where jelly and lollies are used to make a model of a cell.
Pond Critters	Experiment where pond water is collected for students to examine under a microscope.
Preparing and Observing Cells	Experiment where onion and cheek cells are collected and prepared to practice proper microscope and slide preparation techniques.
Cross Pollination	Investigation into how plants in the school garden reproduce.
Building a Density Tower	In this investigation students will build a density tower and use it to compare the densities of different objects.
Observing Atmospheric Pressure	In this investigation, students will observe how air pressure pushes upon the objects on Earth.
Comparing Properties	In this investigation, students compare the different properties of metals, non-metals and metalloids.
Flame Test	In this investigation, students observe the different coloured flames produced by different elements.
Indirect Observations	In this investigation, students compare direct and indirect observations.
Making Models	In this investigation, students make models of elements, compounds and molecules.
Making Recycled Paper	In this experiment, students make recycled paper through a series of physical changes.
Observing Chemical Reactions	In this experiment, students make observations of some important chemical reactions.
Observing Reactions with Fire	In this experiment, students observe the reactions that occur when substances are burned in oxygen.
Rusting in Different Environments	In this experiment, students rust nails over a period of time and then measure their change in weight to understand different reaction conditions.
Cooling Crystals	In this investigation, students will grow crystals.



Bouncy Balls and Energy Efficiency	Investigation on energy transformations and efficiency in bouncy balls.
Building a Solar Oven	Investigation on constructing a solar oven to heat water.
Building Circuits	Investigation into lightbulbs in series and parallel circuits.
Energy in Skate Parks	Investigation into the relationship between mass and gravitational potential energy using the PhET skate park simulation.
Energy Transformations	An investigation into the energy transformations which occur in four different scenarios.
Investigating Heat Energy	An investigation into the effectiveness of different materials as cups by testing their heat conduction abilities.
Rube Goldberg Machine	An investigation into the energy transformations and transfers that take place in Rube Goldberg machines.
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 can 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. ([ACESIS140](#))

Pond Critters	Experiment where pond water is collected for students to examine under a microscope.
Preparing and Observing Cells	Experiment where onion and cheek cells are collected and prepared to practice proper microscope and slide preparation techniques.
Parts and Functions of a Microscope	How microscopes work and what they are.
Magnification and Resolution	How magnification can be calculated and changed and how this relates to the field of view and resolution.
How to Use a Microscope	Instructions on how to properly use a microscope.
Using a Microscope	Investigation in which students learn how to use a microscope correctly by preparing a wet mount of a newspaper cutting containing a lowercase "e" and observing it under the microscope.
Cross Pollination	Investigation into how plants in the school garden reproduce.



First Aid and Body Systems	Practical lesson in which students learn about basic first aid.
Flower Dissection	This lesson takes teachers and students through a dissection of a flower.
Heart Dissection	This lesson takes teachers and students through a dissection of a heart.
Building a Density Tower	In this investigation students will build a density tower and use it to compare the densities of different objects.
Building a Steam Engine	In this investigation, students will build a simple steam engine called a Hero engine.
Observing Atmospheric Pressure	In this investigation, students will observe how air pressure pushes upon the objects on Earth.
Comparing Properties	In this investigation, students compare the different properties of metals, non-metals and metalloids.
Flame Test	In this investigation, students observe the different coloured flames produced by different elements.
Indirect Observations	In this investigation, students compare direct and indirect observations.
Making Models	In this investigation, students make models of elements, compounds and molecules.
Making Recycled Paper	In this experiment, students make recycled paper through a series of physical changes.
Observing Chemical Reactions	In this experiment, students make observations of some important chemical reactions.
Observing Reactions with Fire	In this experiment, students observe the reactions that occur when substances are burned in oxygen.
Rusting in Different Environments	In this experiment, students rust nails over a period of time and then measure their change in weight to understand different reaction conditions.
Build a Stratigraphic Column	In this investigation, students will build a stratigraphic column to understand how geologists use these columns to study the Earth.
Cooling Crystals	In this investigation, students will grow crystals.
Simulating Erosion	In this investigation, students will simulate erosion to understand this essential process.
Bouncy Balls and Energy Efficiency	Investigation on energy transformations and efficiency in bouncy balls.
Building a Solar Oven	Investigation on constructing a solar oven to heat water.
Building Circuits	Investigation into lightbulbs in series and parallel circuits.
Energy in Skate Parks	Investigation into the relationship between mass and gravitational potential energy using the PhET skate park simulation.
Energy Transformations	An investigation into the energy transformations which occur in four different scenarios.
Investigating Heat Energy	An investigation into the effectiveness of different materials as cups by testing their heat conduction abilities.
Ohm's Law	Investigation into Ohm's Law in a simple circuit.
Resistance	An investigation where students compare the measured resistance for a number of resistors to the resistance advertised by the resistors' coloured bands.
Rube Goldberg Machine	An investigation into the energy transformations and transfers that take place in Rube Goldberg machines.
Static Electricity	An investigation into static electricity and how it can be used to levitate objects.
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 can 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. ([ACSSIS141](#))

Rusting in Different Environments	In this experiment, students rust nails over a period of time and then measure their change in weight to understand different reaction conditions.
Cooling Crystals	In this investigation, students will grow crystals.



<u>Battery Voltages</u>	An investigation where students measure the voltages on a range of batteries and compare this to the advertised voltages.
<u>Bouncy Balls and Energy Efficiency</u>	Investigation on energy transformations and efficiency in bouncy balls.
<u>Building a Solar Oven</u>	Investigation on constructing a solar oven to heat water.
<u>Building Circuits</u>	Investigation into lightbulbs in series and parallel circuits.
<u>Energy in Skate Parks</u>	Investigation into the relationship between mass and gravitational potential energy using the PhET skate park simulation.
<u>Investigating Heat Energy</u>	An investigation into the effectiveness of different materials as cups by testing their heat conduction abilities.
<u>Ohm's Law</u>	Investigation into Ohm's Law in a simple circuit.
<u>Resistance</u>	An investigation where students compare the measured resistance for a number of resistors to the resistance advertised by the resistors' coloured bands.
<u>Equipment Types</u>	A Smart Lesson going through basic laboratory equipment and its uses.
<u>Measuring in Science</u>	Smart Lesson on how to read different measuring tools. The tools discussed are rulers, measuring cylinders, protractors, thermometers and scales.
<u>Reading the Meniscus</u>	Smart Lesson on the way to read a measurement from a fluid which has a meniscus.
<u>Measuring Electricity</u>	A lesson describing how to measure voltage, current and resistance using ammeters, voltmeters and multimeters.
<u>Parts and Functions of a Microscope</u>	How microscopes work and what they are.
<u>Magnification and Resolution</u>	How magnification can be calculated and changed and how this relates to the field of view and resolution.
<u>How to Use a Microscope</u>	Instructions on how to properly use a microscope.
<u>Using a Microscope</u>	Investigation in which students learn how to use a microscope correctly by preparing a wet mount of a newspaper cutting containing a lowercase "e" and observing it under the microscope.
<u>Variables</u>	Smart Lesson about independent variables, dependent variables and control variables.
<u>Control Variables and Control Groups</u>	A Smart Lesson on the importance of control variables and control groups, and the importance of using these for results to be meaningful.
<u>Accuracy</u>	Smart Lesson on accuracy and selecting measuring equipment which will give a more accurate result.
<u>Repeatability and Reliability</u>	An introduction to repeatability and reliability and their importance when carrying out experiments.
<u>Validity</u>	Smart Lesson on validity when performing an experiment, and how changing variables can invalidate an experiment.
<u>Fair Tests</u>	Smart Lesson on fair tests and how to control variables.
<u>Scientific Method</u>	Smart Lesson on the scientific method and how to write a scientific report.
<u>Hypothesising and Predicting</u>	A lesson on how to make a scientific hypothesis and predicting results of experiments.
<u>Observations and Inferences</u>	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. [\(ACSI144\)](#)

Food Safety and Salmonella	In this lesson, students interpret data on how temperature affects the rate of cell division in salmonella. From this, they draw conclusions about how to safely store food.
Flower Dissection	This lesson takes teachers and students through a dissection of a flower.
Heart Dissection	This lesson takes teachers and students through a dissection of a heart.
Relative Heart Size	In this lesson, students interpret data on the relative heart size in different species. They explore links between life style and heart size.
Rusting in Different Environments	In this experiment, students rust nails over a period of time and then measure their change in weight to understand different reaction conditions.
Build a Geological Timescale	In this investigation, students will build a geological timescale to understand the age of the Earth and everything in it.
Build a Stratigraphic Column	In this investigation, students will build a stratigraphic column to understand how geologists use these columns to study the Earth.
Battery Voltages	An investigation where students measure the voltages on a range of batteries and compare this to the advertised voltages.
Bouncy Balls and Energy Efficiency	Investigation on energy transformations and efficiency in bouncy balls.
Building a Solar Oven	Investigation on constructing a solar oven to heat water.
Energy in Skate Parks	Investigation into the relationship between mass and gravitational potential energy using the PhET skate park simulation.
Energy Transformations	An investigation into the energy transformations which occur in four different scenarios.
Investigating Heat Energy	An investigation into the effectiveness of different materials as cups by testing their heat conduction abilities.
Ohm's Law	Investigation into Ohm's Law in a simple circuit.
Resistance	An investigation where students compare the measured resistance for a number of resistors to the resistance advertised by the resistors' coloured bands.



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. ([ACSSU145](#))

Jelly Cells	Experiment where jelly and lollies are used to make a model of a cell.
Pond Critters	Experiment where pond water is collected for students to examine under a microscope.
Preparing and Observing Cells	Experiment where onion and cheek cells are collected and prepared to practice proper microscope and slide preparation techniques.
Food Safety and Salmonella	In this lesson, students interpret data on how temperature affects the rate of cell division in salmonella. From this, they draw conclusions about how to safely store food.
Cross Pollination	Investigation into how plants in the school garden reproduce.
Flower Dissection	This lesson takes teachers and students through a dissection of a flower.
Heart Dissection	This lesson takes teachers and students through a dissection of a heart.
Relative Heart Size	In this lesson, students interpret data on the relative heart size in different species. They explore links between life style and heart size.
Building a Density Tower	In this investigation students will build a density tower and use it to compare the densities of different objects.
Building a Steam Engine	In this investigation, students will build a simple steam engine called a Hero engine.
Observing Atmospheric Pressure	In this investigation, students will observe how air pressure pushes upon the objects on Earth.
Comparing Properties	In this investigation, students compare the different properties of metals, non-metals and metalloids.
Flame Test	In this investigation, students observe the different coloured flames produced by different elements.
Indirect Observations	In this investigation, students compare direct and indirect observations.
Making Models	In this investigation, students make models of elements, compounds and molecules.
Observing Chemical Reactions	In this experiment, students make observations of some important chemical reactions.
Observing Reactions with Fire	In this experiment, students observe the reactions that occur when substances are burned in oxygen.
Rusting in Different Environments	In this experiment, students rust nails over a period of time and then measure their change in weight to understand different reaction conditions.
Build a Geological Timescale	In this investigation, students will build a geological timescale to understand the age of the Earth and everything in it.
Build a Stratigraphic Column	In this investigation, students will build a stratigraphic column to understand how geologists use these columns to study the Earth.
Cooling Crystals	In this investigation, students will grow crystals.
Comparing Minerals	Lesson presents data on different minerals and their properties for students to interpret.
Battery Voltages	An investigation where students measure the voltages on a range of batteries and compare this to the advertised voltages.
Bouncy Balls and Energy Efficiency	Investigation on energy transformations and efficiency in bouncy balls.



Building a Solar Oven	Investigation on constructing a solar oven to heat water.
Building Circuits	Investigation into lightbulbs in series and parallel circuits.
Energy in Skate Parks	Investigation into the relationship between mass and gravitational potential energy using the PhET skate park simulation.
Energy Transformations	An investigation into the energy transformations which occur in four different scenarios.
Investigating Heat Energy	An investigation into the effectiveness of different materials as cups by testing their heat conduction abilities.
Ohm's Law	Investigation into Ohm's Law in a simple circuit.
Resistance	An investigation where students compare the measured resistance for a number of resistors to the resistance advertised by the resistors' coloured bands.
Static Electricity	An investigation into static electricity and how it can be used to levitate objects.
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.
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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. ([ACSSIS146](#))

Jelly Cells	Experiment where jelly and lollies are used to make a model of a cell.
Preparing and Observing Cells	Experiment where onion and cheek cells are collected and prepared to practice proper microscope and slide preparation techniques.
Food Safety and Salmonella	In this lesson, students interpret data on how temperature affects the rate of cell division in salmonella. From this, they draw conclusions about how to safely store food.
Cross Pollination	Investigation into how plants in the school garden reproduce.
Relative Heart Size	In this lesson, students interpret data on the relative heart size in different species. They explore links between life style and heart size.
Building a Density Tower	In this investigation students will build a density tower and use it to compare the densities of different objects.
Building a Steam Engine	In this investigation, students will build a simple steam engine called a Hero engine.
Making Ice Cream	In this investigation students will learn how state changes can be used to make tasty treats, like ice cream!
Observing Atmospheric Pressure	In this investigation, students will observe how air pressure pushes upon the objects on Earth.
Comparing Properties	In this investigation, students compare the different properties of metals, non-metals and metalloids.
Flame Test	In this investigation, students observe the different coloured flames produced by different elements.
Indirect Observations	In this investigation, students compare direct and indirect observations.
Making Models	In this investigation, students make models of elements, compounds and molecules.
Making Recycled Paper	In this experiment, students make recycled paper through a series of physical changes.
Observing Chemical Reactions	In this experiment, students make observations of some important chemical reactions.
Observing Reactions with Fire	In this experiment, students observe the reactions that occur when substances are burned in oxygen.
Rusting in Different Environments	In this experiment, students rust nails over a period of time and then measure their change in weight to understand different reaction conditions.
Cooling Crystals	In this investigation, students will grow crystals.
Battery Voltages	An investigation where students measure the voltages on a range of batteries and compare this to the advertised voltages.
Bouncy Balls and Energy Efficiency	Investigation on energy transformations and efficiency in bouncy balls.
Building a Solar Oven	Investigation on constructing a solar oven to heat water.
Building Circuits	Investigation into lightbulbs in series and parallel circuits.
Energy in Skate Parks	Investigation into the relationship between mass and gravitational potential energy using the PhET skate park simulation.



Energy Transformations	An investigation into the energy transformations which occur in four different scenarios.
Investigating Heat Energy	An investigation into the effectiveness of different materials as cups by testing their heat conduction abilities.
Ohm's Law	Investigation into Ohm's Law in a simple circuit.
Resistance	An investigation where students compare the measured resistance for a number of resistors to the resistance advertised by the resistors' coloured bands.
Rube Goldberg Machine	An investigation into the energy transformations and transfers that take place in Rube Goldberg machines.
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 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.
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.
Evaluating in Science	A lesson explaining how to evaluate experimental results.

Use scientific knowledge and findings from investigations to evaluate claims based on evidence. [\(ACSiS234\)](#)

Battery Voltages	An investigation where students measure the voltages on a range of batteries and compare this to the advertised voltages.
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.



<u>Validity</u>	Smart Lesson on validity when performing an experiment, and how changing variables can invalidate an experiment.
<u>Fair Tests</u>	Smart Lesson on fair tests and how to control variables.
<u>Sample Size</u>	A Smart Lesson on the importance of large sample sizes in collecting accurate results.
<u>Scientific Method</u>	Smart Lesson on the scientific method and how to write a scientific report.
<u>Evaluating in Science</u>	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. [\(ACSSIS148\)](#)

<u>First Aid and Body Systems</u>	Practical lesson in which students learn about basic first aid.
<u>Build a Geological Timescale</u>	In this investigation, students will build a geological timescale to understand the age of the Earth and everything in it.
<u>Battery Voltages</u>	An investigation where students measure the voltages on a range of batteries and compare this to the advertised voltages.
<u>Bouncy Balls and Energy Efficiency</u>	Investigation on energy transformations and efficiency in bouncy balls.
<u>Building a Solar Oven</u>	Investigation on constructing a solar oven to heat water.
<u>Building Circuits</u>	Investigation into lightbulbs in series and parallel circuits.
<u>Energy in Skate Parks</u>	Investigation into the relationship between mass and gravitational potential energy using the PhET skate park simulation.
<u>Energy Transformations</u>	An investigation into the energy transformations which occur in four different scenarios.
<u>Ohm's Law</u>	Investigation into Ohm's Law in a simple circuit.
<u>Resistance</u>	An investigation where students compare the measured resistance for a number of resistors to the resistance advertised by the resistors' coloured bands.
<u>Static Electricity</u>	An investigation into static electricity and how it can be used to levitate objects.
<u>Graphs in Science</u>	Smart Lesson on how graphs are used in science.
<u>Bar Graphs</u>	Smart Lesson about bar graphs, and what type of information is best represented in bar graphs.
<u>Line Graphs</u>	Smart Lesson explaining how to make and read a line graph.
<u>Scatter Graphs</u>	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.

