



# Lesson Plans

## Year 7 Science

## Chapter 1 Science Inquiry Skills

### Some general points about the following lesson plans:

- ★ The lesson plans outline only one way of sequencing the learning material in this chapter of the textbook.
- ★ The content and sequence will obviously vary from class to class (The following guide is ambitious in many instances).
- ★ All activities and investigations in each chapter have been deliberately designed to support the National Curriculum content whilst keeping in mind the development and reinforcement of skills required in the study of science in Year 11/12.
- ★ The length of lessons vary from school to school and even within schools. The following guide is based on 35/40 min lessons because it was reasoned that adjustment to 60/75/90 mins lessons would be easier than reducing lesson plans.
- ★ Students may be challenged further by completing each chapter Task, Competition Questions, Challenges, and by finding and entering any of the many competitions, challenges, projects etc that may be found on the Internet. Such students may benefit by doing an Internet search early in the year and planning entries before they close.

## Assessment

Inquiry Report

## Content Description (1 week)

**Questioning and Predicting:** Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge (AC SIS124).

**Planning and Conducting:** Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (AC SIS125). In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task (AC SIS126).

**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, including using digital technologies as appropriate (AC SIS129). Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions (AC SIS130).

**Evaluating:** Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method (AC SIS131). Use scientific knowledge and findings from investigations to evaluate claims (AC SIS132).

**Communicating:** Communicate ideas, findings and solutions to problems using scientific language and representations using digital technologies as appropriate (AC SIS133).

## **Content strands**

The Australian Curriculum: Science has three interrelated strands: Science Understanding, Science as a Human Endeavour and Science Inquiry Skills.

### **Science as a Human Endeavour**

Scientific knowledge changes as new evidence becomes available, and some scientific discoveries have significantly changed people's understanding of the world (ACSHE119)

- investigating how advances in telescopes and space probes have provided new evidence about space
- researching different ideas used in the development of models of the solar system developed by scientists such as Copernicus, Khayyám and Galileo
- researching developments in the understanding of astronomy, such as the predictions of eclipses and the calculation of the length of the solar year by Al-Battani in the tenth century

Science knowledge can develop through collaboration and connecting ideas across the disciplines of science (ACSHE223)

- considering how water use and management relies on knowledge from different areas of science, and involves the application of technology
- identifying the contributions of Australian scientists to the study of human impact on environments and to local environmental management projects
- investigating how land management practices of Aboriginal and Torres Strait Islander peoples can help inform sustainable management of the environment
- studying transnational collaborative research in the Antarctic
- recognising that traditional and Western scientific knowledge can be used in combination to care for Country and Place

Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations (ACSHE120)

- relating regulations about wearing seatbelts or safety helmets to knowledge of forces and motion
- considering issues relating to the use and management of water within a community
- considering decisions made in relation to the recycling of greywater and blackwater
- considering how human activity in the community can have positive and negative effects on the sustainability of ecosystems
- investigating ways to control the spread of the cane toad

Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (ACSHE121)

- investigating everyday applications of physical separation techniques such as filtering, sorting waste materials, reducing pollution, extracting products from plants, separating blood products and cleaning up oil spills
- investigating how advances in science and technology have been applied to the treatment of water in industrial and household systems
- investigating how Aboriginal and Torres Strait Islander knowledge is being used to inform scientific decisions, for example care of waterways
- researching the different scientific responses to the rabbit plagues in Australian agricultural areas

People use understanding and skills from across the disciplines of science in their occupations (ACSHE224)

- recognising that water management plays a role in areas such as farming, land management and gardening
- investigating how separation techniques are used in the food and wine industries
- considering how seasonal changes affect people in a variety of activities such as farming
- considering how sports scientists apply knowledge of forces in order to improve performance

### **Science Inquiry Skills**

Science inquiry involves identifying and posing questions; planning, conducting and reflecting on investigations; processing, analysing and interpreting evidence; and communicating findings. This strand is concerned with evaluating claims, investigating ideas, solving problems, drawing valid conclusions and developing evidence-based arguments.

## Chapter 1 Science Inquiry Skills (1 week)

Lesson	Method	Resources
1	<ul style="list-style-type: none"> <li><input type="checkbox"/> General (covering book, ruling pages, paste study guide etc.)</li> <li><input type="checkbox"/> Purpose of chapter</li> <li><input type="checkbox"/> Introduce/discuss Science inquiry p2</li> <li><input type="checkbox"/> Activity: Naked egg in water p3</li> <li><input type="checkbox"/> Discuss: Questioning p4</li> <li><input type="checkbox"/> Exercise p4</li> <li><input type="checkbox"/> HW: Complete report of naked egg activity</li> </ul>	Equipment for naked egg activity
2	<ul style="list-style-type: none"> <li><input type="checkbox"/> Discuss: Predicting p6</li> <li><input type="checkbox"/> Exercises p6</li> <li><input type="checkbox"/> Discuss: Planning p8 and Conducting p9</li> <li><input type="checkbox"/> Activity: Select an activity from p7-9</li> <li><input type="checkbox"/> HW: Complete report of activity</li> </ul>	Equipment for activity selected
3	<ul style="list-style-type: none"> <li><input type="checkbox"/> Discuss: Measuring p10</li> <li><input type="checkbox"/> Activity: Memorise units and conversion of length p10 and volume p11</li> <li><input type="checkbox"/> Exercise p10 and p11</li> <li><input type="checkbox"/> Activity: Memorise units and conversion of time p12, temperature p13, and mass p13</li> <li><input type="checkbox"/> Exercise p12 and p13</li> <li><input type="checkbox"/> HW: Complete exercises as necessary</li> </ul>	
4	<ul style="list-style-type: none"> <li><input type="checkbox"/> Discuss: Processing p14</li> <li><input type="checkbox"/> Exercise p15</li> <li><input type="checkbox"/> Discuss: Analysing p16</li> <li><input type="checkbox"/> Exercise p17</li> <li><input type="checkbox"/> Discuss: Technology p18 and p19</li> <li><input type="checkbox"/> Activity: Graph the data p18 and p19 using graphing tools available</li> <li><input type="checkbox"/> HW: Complete exercises as necessary</li> </ul>	
5	<ul style="list-style-type: none"> <li><input type="checkbox"/> Discuss: Evaluating and communicating p20</li> <li><input type="checkbox"/> Chapter review p22</li> <li><input type="checkbox"/> Exercise on Science Inquiry p26</li> <li><input type="checkbox"/> HW: Complete exercise as necessary</li> </ul>	