Lesson Plans

Year 8 Science Chapter 7 Chemical Reactions

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

A Task
Inquiry Report
End of Unit Test

Content Description (4 weeks)

Chapter 7

Chemical change involves substances reacting to form new substances (ACSSU225)

- ★ identify the differences between chemical and physical changes
- ★ identify evidence that a chemical change has taken place
- ★ investigate simple reactions such as combining elements to make a compound
- ★ recognise that the chemical properties of a substance, for example its flammability and ability to corrode, will affect its use

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 (ACSHE134)

- investigating developments in the understanding of cells and how this knowledge has impacted on areas such as health and medicine
- discovering how people's understanding of the nature of matter has changed over time as evidence for particle theory has become available through developments in technology
- considering how the idea of elements has developed over time as knowledge of the nature of matter has improved
- investigating the development of the microscope and the impact it has had on the understanding of cell functions and division

Science knowledge can develop through collaboration and connecting ideas across the disciplines of science (ACSHE226)

- investigating how knowledge of the location and extraction of mineral resources relies on expertise from across the disciplines of science
- considering how advances in technology, combined with scientific understanding of the functioning of body systems, has enabled medical science to replace or repair organs
- researching the use of reproductive technologies and how developments in this field rely on scientific knowledge from different areas of science

Use and influence of science

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 (ACSHE135)

- investigating requirements and the design of systems for collecting and recycling household waste
- investigating strategies implemented to maintain part of the local environment, such as bushland, a beach, a lake, a desert or a shoreline
- investigating how energy efficiency can reduce energy consumption
- investigating the development of vehicles over time, including the application of science to contemporary designs of solar-powered vehicles
- discussing ethical issues that arise from organ transplantation

Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (ACSHE136)

- describing how technologies have been applied to modern farming techniques to improve yields and sustainability
- investigating how Aboriginal people recognise relationships in ecosystems by burning to promote new growth, attract animals and afford easier hunting and food gathering
- describing the impact of plant cloning techniques (asexual production) in agriculture such as horticulture, fruit production and vineyards
- investigating the role of science in the development of technology important to the economies and communities of the Asia–Pacific regions, for example car manufacture, earthquake prediction and electronic optics

People use understanding and skills from across the disciplines of science in their occupations (ACSHE227)

- recognising the role of knowledge of the environment and ecosystems in a number of occupations
- considering how engineers improve energy efficiency of a range of processes
- recognising the role of knowledge of cells and cell divisions in the area of disease treatment and control
- investigating how scientists have created new materials such as synthetic fibres, heat-resistant plastics and pharmaceuticals

Science Inquiry Skills

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 7 Chemical Reactions (4 weeks)

Lesson	Method	Resources
1	General (covering book, ruling pages, paste study guide etc.) Purpose of chapter Introduce/discuss: Chemical reactions Discuss/Internet: Chemistry of fire HW: What is fire?	Internet
2	Discuss: Physical change p146 Activity: Make a list of 10 examples of physical change and indicate why each is a physical change Exercise p146 HW: Complete exercise as necessary	Internet
3	Test: What is a physical change? Give 3 examples Discuss: Chemical change p147 Activity: Make a list of 10 examples of chemical change and indicate why each is a chemical change Exercise p147 HW: Complete exercise as necessary	Internet
4	Test: What is a chemical change? Give 3 examples Discuss: The evidence that indicates a chemical change/chemical reaction Discuss: Exothermic & endothermic chemical reactions/change Activity: Vinegar and baking soda p148 HW: Exothermic and endothermic reactions	Vinegar, baking soda, thermometer, container
5	Test: Exothermic and endothermic, physical change Discuss: Colour change as evidence of a chemical change/reaction p149 Activity: Milk and colour p149 Exercise p149 HW: Complete exercise as necessary	Milk,plate, food colouring, detergent, cotton buds
6	Test: Physical change, chemical change Discuss: Bubbles as evidence of chemical change/reaction p150 Activity: Baking soda and coke-cola p150 Discuss: Smell as evidence of chemical change/reaction p150 HW: A challenge from p150	Baking soda, coke-cola, thermometer, container
7	Test: Evidence of a chemical change/reaction Discuss: Light as evidence of a chemical change/reaction p151 Discuss: Precipitate as evidence of a chemical change/reaction p151 Activity: Precipitate p151 Exercise p151 HW: Complete exercise as necessary	Baking soda, calcium chloride, containers
8	Discuss: Chemical reactions p152 Discuss: Simple combination reactions p152 Internet: Hydrogen lit splint test p152 Activity: Make and test for hydrogen p152 Memorise hydrogen lit splint test equation p152 HW: Revise hydrogen lit splint test equation	Dilute HCl, Zn, test tube, rack, splint, bunsen burner Internet

Chapter 7 Chemical Reactions (4 weeks)

Lesson	Method	Resources
9	Test: Hydrogen lit splint test equation, combination reactions Discuss: Combustion reactions p153 Internet: Burning coal, Burning magnesium Write and memorise burning coal, magnesium equations p153 Exercise p153 HW: Complete exercise as necessary, revise combustion equations	Internet
10	Test: Combustion equations, combination equation Discuss: Decomposition reactions p154 Discuss: Some decomposition reactions p154 Write and memorise some decomposition equations p154 Activity: Decomposition of sugar p154 HW: Revise decomposition reactions	Internet sugar, test tube, holder, rack, bunsen burner
11	Test: Combustion, combination, decomposition reactions Activity: Decomposition of calcium carbonate p155 Exercise p155 HW: Complete exercise as necessary, challenge p155	limestone, bunsen burner, tripod, tongs, etc
12	Test: Combustion, combination, decomposition reactions Discuss: Chemical properties p156 Discuss: Chemical properties of hydrogen p156 Discuss: Chemical properties of iron p157 HW: Revise chemical properties of hydrogen and iron	
13	Test: Chemical properties of hydrogen and iron Word bank p157 Exercise p157 HW: Complete exercise as necessary	
14	Discuss: Science knowledge - Ripening and rotting fruit p158 Exercise p158 Discuss: Science knowledge - Hydrogen fuel cell p159 Exercise p159 HW: Complete exercises as necessary	

Chapter 7 Chemical Reactions (4 weeks)

Lesson	Method	Resources
15	Science inquiry • Group selection of an inquiry question from p161 • Group conduction of an investigation to answer the question.	
16	• Continuation of investigation • Write report (samples on p21 and p25) • HW: Complete report as required	
17	Chapter Review and Task • Exercise p162 and p163 • Puzzles p165 • Begin work on 'A Task' p145 • HW: Complete exercises & work on task as required	
18	Chapter Review and Task • Exercise p164 and p166 • Continue work on 'A Task' p145 • HW: Complete exercises & work on task as required	
19	Chapter Review and Task • Competition questions p167 • Harder test questions p168 • Preparation for test • Continue work on 'A Task' p145 • HW: Complete exercises & work on task as required	
20	• End of chapter/unit test	