

**Term 3: What's the Matter? (Chemistry)****Year 8 Australian Curriculum 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. They identify different forms of energy and describe how energy transfers and transformations cause change in simple systems. They compare processes of rock formation, including the timescales involved. They will analyse the relationship between structure and function at cell, organ and body system levels. 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. 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.

**Unit overview:**

In this unit students investigate the physical and chemical properties of materials and the relationship between these properties in the use of materials.

Students are introduced to the particle model of matter and use it to explain properties.

Students will be introduced to elements including their symbolic representation and the basic structure and development of the periodic table of elements.

They will identify, represent and explain chemical change using the particle model of matter.

They will plan and conduct fair tests, record observations and collect, represent and analyse qualitative and quantitative data. Students will reflect on the methods used to test properties and evaluate the quality of the data collected. They will use their data to draw evidence-based conclusions.

**Assessment Overview:****Task: Summative Data Test****Key Skill/s:**

- **Assessment objective 1:** Apply understanding of the particle model of matter theory to explain and predict the properties of substances to given algebraic, visual or graphical representations of scientific relationships and data to determine unknown scientific quantities.
- **Assessment objective 2:** Analyse evidence about the behaviour of substances to identify trends, patterns, relationships, limitations or measures of uncertainty of datasets.
- **Assessment objective 3:** Interpret evidence about the particle model of matter theory and the properties and behaviours of substances to draw conclusions based on analysis of datasets
- **Assessment objective 4:** communicate understanding of theories underpinning the particle model of matter

**Conditions:**

- 1 lesson
- exam conditions

**Task: Summative Student Experiment****Key Skill/s:**

- Comprehensively **describe** and **explain** scientific information, concepts and relationships
- Formulate hypothesis that can be scientifically investigated
- Write a method that reflects fair testing principles
- Analysis of trends in data to draw conclusions about relationships between variables
- Evaluation of investigation and recommendations
- Communicate effectively, using proper sentences and grammar

**Conditions:**

- 2 weeks in-class time
- Experiment conducted in groups
- Student experiment report written individually

Guaranteed Vocabulary (tier 3):

Design Question Three Strategy

Design Question Four Strategy

21<sup>st</sup> Century Skills:

Atom Chemical property Chemistry Compound Compressibility Compressional Strength Condensation Density Diffusion Element Hardness Incompressible Kinetic energy Lattice	Mass Matter Molecule Particle Particle model of matter Physical property Plasma Pressure Property States of matter Sublimation Tensile Vaporisation Vapour Volume	Using graphic organisers to compare properties of states of matter  Use review questions from OBI to review content at the start of the next lesson or as homework  Use models to show abstract concepts such as the particle model  Science by Doing resources	Provide complex or unique problems for students to engage with that require hypothesis generation  Investigate real world problems that require hypothesis generation with real world parameters.  Science by Doing resources	Use of ICT for learning  Knowledge construction  <i>Self regulation</i>
<b>Guaranteed Skills/Language Features:</b>	<b>Reading Comprehension Skill and Strategy</b>	<b>CCEs and Key Terms:</b>	<b>ICT to Enhance Learning:</b>	
Factional explanation – Student Experiment	Generating questions Synthesising <i>Making inferences</i> <i>Determining Importance</i>  Refer to page 53 of Buehl for appropriate strategies	Summarise Justify <i>Describe</i> <i>Explain</i> <i>Analyse</i> <i>Interpret</i> <i>Predict</i>	Use word to process word document  Obook interactive  Animations of complex concepts  Internet research  Web quests	

**Learning Goals:**

Strands and Sub-Strands	Australian Curriculum Content Descriptors	Kirwan High Goals – Students will know and/or be able to
<b>SCIENCE UNDERSTANDING</b>		
Chemical Sciences	<ul style="list-style-type: none"> <li>Properties of the different states of matter can be explained in terms of the motion and arrangement of particles (ACSSU151)</li> </ul>	<ul style="list-style-type: none"> <li>explain why a model for the structure of matter is needed</li> <li>model the arrangement of particles in solids, liquids and gases</li> <li>use the particle model to explain observed phenomena linking the energy of particles to temperature changes</li> </ul>
	<ul style="list-style-type: none"> <li>Differences between elements, compounds and mixtures can be described at a particle level (ACSSU152)</li> </ul>	<ul style="list-style-type: none"> <li>locate elements on the periodic table</li> <li>model the arrangement of particles in elements and compounds</li> <li>recognise that elements and simple compounds can be represented by symbols and formulas</li> </ul>
	<ul style="list-style-type: none"> <li>Chemical change involves substances reacting to form new substances (ACSSU255)</li> </ul>	<ul style="list-style-type: none"> <li>Identify the differences between chemical and physical changes</li> <li>Investigate simple reactions such as combining elements to make a compound</li> </ul>
<b>SCIENCE INQUIRY SKILLS</b>		
Questioning and predicting	<ul style="list-style-type: none"> <li>Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge (AC SIS139)</li> </ul>	<ul style="list-style-type: none"> <li>consider whether investigation using available resources is possible when identifying questions or problems to investigate</li> <li>recognise that the solution of some questions and problems requires consideration of social, cultural, economic or moral aspects rather than or as well as scientific investigation</li> <li>use information and knowledge from their own investigations and secondary sources to predict the expected results from an investigation</li> </ul>
Planning and conducting	<ul style="list-style-type: none"> <li>Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (AC SIS140)</li> </ul>	<ul style="list-style-type: none"> <li>work collaboratively to decide how to best approach an investigation</li> <li>Identify any ethical considerations that may apply to the investigation</li> <li>draw conclusions based on a range of evidence including primary and secondary sources</li> </ul>
	<ul style="list-style-type: none"> <li>Measure and control variables, and select equipment appropriate to the task and collect data with accuracy(AC SIS141)</li> </ul>	<ul style="list-style-type: none"> <li>use specialised equipment to increase the accuracy of measurement within an investigation</li> <li>identify and explaining the differences between controlled, dependent and independent variables</li> </ul>

Processing and analysing data and information	<ul style="list-style-type: none"> <li>Construct and use a range of representations including graphs, keys and models to represent and analyse patterns or relationships in data using digital technologies as appropriate (AC SIS144)</li> </ul>	<ul style="list-style-type: none"> <li>describe measures of central tendency and identify outliers for quantitative data</li> <li>explain the strengths and limitations of representations such as physical models, diagrams and simulations in terms of the attributes of systems included or not included</li> </ul>
	<ul style="list-style-type: none"> <li>Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions based on evidence (AC SIS145)</li> </ul>	<ul style="list-style-type: none"> <li>construct tables, graphs, keys and models to represent relationships and trends in collected data</li> <li>draw conclusions based on a range of evidence including primary and secondary sources</li> </ul>
Evaluating	<ul style="list-style-type: none"> <li>Reflect on scientific investigations including evaluating the quality of the data collected, and identifying improvements (AC SIS146)</li> </ul>	<ul style="list-style-type: none"> <li>suggest improvements to investigation methods that would improve the accuracy of the data recorded</li> <li>discuss investigation methods with others to share ideas about the quality of the inquiry process</li> </ul>
Communicating	<ul style="list-style-type: none"> <li>Communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate (AC SIS148)</li> </ul>	<ul style="list-style-type: none"> <li>use digital technologies to construct a range of text types to present science ideas</li> <li>Select and using appropriate language and representations to communicate science ideas within a specified text type and for a specified audience</li> </ul>

**Possible Habit of Mind: *Striving for accuracy***

<p><b>Exploring Meaning of the HOM</b> By the end of this unit students will be able to:</p> <p>Exploring how to create a fair test and the purpose of a fair test</p>	<p><b>Expanding Capacity for using the HOM</b> By the end of this unit students will be able to:</p> <p>Use fair testing to get accurate results</p>	<p><b>Increasing Alertness for the HOM</b> By the end of this unit students will be able to:</p> <p>Understand the purpose of fair testing and accurate results in science</p>	<p><b>Extending Values of the HOM</b> By the end of this unit students will be able to:</p> <p>Be able to create a fair test with multiple and/or complex variables</p>	<p><b>Building Commitment towards the HOM</b> By the end of this unit students will be able to:</p> <p>Apply the principles of a fair test consistently and accurately across a range of situations</p>
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**General Capabilities:** This unit provides opportunities for students to engage in following capabilities:

<p><b>Literacy</b></p> <ul style="list-style-type: none"> <li>✓ Comprehending texts through listening, reading and viewing</li> <li>✓ Composing texts through speaking, writing and creating</li> <li>✓ Text knowledge</li> <li><input type="checkbox"/> Grammar knowledge</li> <li>✓ Word knowledge</li> <li>✓ Visual knowledge</li> </ul> <p><b>Numeracy</b></p> <ul style="list-style-type: none"> <li>✓ Estimating and calculating with whole numbers</li> <li>✓ Recognising and using patterns and relationships</li> <li>✓ Using fractions, decimals, percentages, ratios and rates</li> <li>✓ Using spatial reasoning</li> <li>✓ Interpreting statistical information</li> <li>✓ Using measurement</li> </ul>	<p><b>ICT</b></p> <ul style="list-style-type: none"> <li>✓ Applying social and ethical protocols and practices when using ICT</li> <li>✓ Investigating with ICT</li> <li>✓ Creating with ICT</li> <li><input type="checkbox"/> Communicating with ICT</li> <li>✓ Managing and operating ICT</li> </ul> <p><b>Critical and creative thinking</b></p> <ul style="list-style-type: none"> <li>✓ Inquiring - identifying, exploring and organising information and ideas</li> <li>✓ Generating ideas, possibilities and actions</li> <li>✓ Reflecting on thinking and processes</li> <li>✓ Analysing, synthesising and evaluating reasoning and procedures</li> </ul>	<p><b>Personal and social capability</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Self-awareness</li> <li>✓ Self-management</li> <li><input type="checkbox"/> Social awareness</li> <li>✓ Social management</li> </ul> <p><b>Ethical understanding</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Understanding ethical concepts and issues</li> <li><input type="checkbox"/> Reasoning in decision making and actions</li> <li><input type="checkbox"/> Exploring values, rights and responsibilities</li> </ul> <p><b>Intercultural understanding</b></p> <ul style="list-style-type: none"> <li>✓ Recognising culture and developing respect</li> <li><input type="checkbox"/> Interacting and empathising with others</li> <li><input type="checkbox"/> Reflecting on intercultural experiences and taking responsibility</li> </ul>
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**Cross Curriculum Priorities:**

<ul style="list-style-type: none"> <li>✓ Aboriginal and Torres Strait Islander histories and cultures</li> </ul>	<ul style="list-style-type: none"> <li>✓ Asia and Australia's engagement with Asia</li> </ul>	<ul style="list-style-type: none"> <li>✓ Sustainability</li> </ul>
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**Differentiation [for small groups or individuals]:**

- Review the available data for you class to understand areas of strength and areas needing support in your students.
- Increase scaffolding to support low literacy classes and students.
- Use formative tasks to give frequent feedback and maintain your understanding of student progress.
- Include opportunities for students to demonstrate deep understanding of complex concepts.
- Monitor the effectiveness of your teaching strategies and change strategies as required. Combine strategies to create macro strategies where appropriate
- Include increased scaffolding around assessment task for students with lower ability. Create a template for writing scientific reports.
- Plan open-ended lesson tasks that require higher order thinking skills from more capable students.
- Include academic rigour to the content of lessons.
- Textbook – essential resources

Lesson Sequence

Week	Lesson 1	Lesson 2	Lesson 3
<p>1 13/07/20</p>	<p><b><u>Learning Sequence 1</u></b>  <b>TOPIC: The nature of matter - introduction lesson</b></p> <ol style="list-style-type: none"> <li>1. Be able to make connections with prior knowledge – <i>chemistry and matter</i></li> <li>2. Be able to define <b>matter</b> and create a glossary (progressively completed during unit)</li> </ol> <p><b>OBI8:</b> page 126-127  <b>Comprehension segment</b>                      Introductory readings and questions                      Classroom strategy – Science connection overview (PG184 Buehl –template on Pg 255)</p> <p><b>Science by doing (SBD):</b> 2.1 page 31, Sorting matter (use pictures if resources unavailable)</p> <p><b>C2C lesson 6 unit 1</b></p> <p><b>School wide imperatives (SWI):</b> use comprehension strategy for engaging with text and identifying important information..</p>	<p><b><u>Learning Sequence 1</u></b>  <b>TOPIC: Particle model of matter</b></p> <ol style="list-style-type: none"> <li>1. Be able to <b>explain</b> the particle model and link this to temperature</li> </ol> <p><b>OBI8:</b> page 135-139  <b>Comprehension segment</b>                      The Particle model of matter Pg 135-136                      Classroom Strategy – Vocabulary Overview guide (pg 217 Buehl – template on pg 259)</p> <p><b>obook:</b> ID04.07 animation of particle model. ID04.08 interactive website exploring particle model.</p> <p><b>Discovering ideas:</b> Examining dyes page 135                      Good previewing activity</p> <p><b>SBD:</b> 2.5 page 36, Tiny particles</p> <p><b>Review questions:</b> page 137</p> <p><b>C2C lesson 8 unit 1</b></p> <p><b>SWI:</b> explicitly teach CCE <b>explaining</b>.  <b>Synthesising</b> a range of topics from a range of resources to develop a deeper understanding.</p>	<p><b><u>Learning Sequence 2</u></b>  <b>TOPIC: Exploring states of matter</b></p> <ol style="list-style-type: none"> <li>1. Understand that there are <b>4 states</b> of matter and that they are defined by their physical properties (solid, liquid, gas, plasma)</li> </ol> <p><b>OBI8:</b> page 128-131  <b>Comprehension segment</b>                      Classroom Strategy - Science connection overview (PG184 Buehl –template on Pg 255)</p> <p><b>Review questions:</b> page 131</p> <p><b>C2C lesson 6 unit 1</b></p> <p><b>School wide imperatives (SWI):</b> explicitly teach CCE <b>describing, Making inferences</b> based on observations of the slime.</p> <p>Review lab safety                      Develop an aim</p>
<p>2 20/07/20</p>	<p><b><u>Learning Sequence 2</u></b>  <b>TOPIC: Exploring states of matter</b></p> <ol style="list-style-type: none"> <li>1. Be able to identify and describe the physical properties of different states of matter (shape, compressibility, flow).</li> <li>2. Compare the boiling and melting points of different substances</li> </ol> <p><b>OBI8:</b> page 128-131  <b>Comprehension segment</b>                      Classroom Strategy - Science connection overview (PG184 Buehl –template on Pg 255)</p>	<p><b><u>Learning Sequence 2</u></b>  <b>TOPIC: Exploring States of Matter- Practical</b></p> <ol style="list-style-type: none"> <li>1. Be able to investigate the physical properties of slime</li> <li>2. Construct a hypothesis</li> </ol> <p><b>Experiment:</b> 4.1 Making Slime page 131</p> <p><b>Experiment:</b> 4.2 Comparing States of Matter page 142</p> <p><b>SBD:</b> 2.6 page 37, Slime – what is its state?</p>	<p><b><u>Learning Sequence 2</u></b>  <b>TOPIC: Exploring states of matter</b></p> <ol style="list-style-type: none"> <li>1. Understand how matter changes state and what causes change</li> <li>2. Be able to create a flow chart that shows changes in state and the processes (including gas-solid)</li> <li>3. Be able to compare and contrast the physical properties of the different states using a graphic organiser (3-way Venn Diagram)</li> </ol> <p><b>OBI8:</b> page 128-131</p>

	<p><b>Review questions:</b> page 131</p> <p><b>C2C lesson 6 unit 1</b></p> <p><b>School wide imperatives (SWI):</b> explicitly teach CCE <b>describing, Making inferences</b> based on observations of the slime.</p> <p>Review lab safety Develop an aim</p>	<p><b>OBI8:</b> page 132-134, 154 <b>Comprehension segment</b> Changing state Pg132-133 Classroom strategy – Vocabulary Overview Guide (pg 217 Buehl – template on pg 259)</p> <p><b>obook:</b> ID04.04 interactive activity. ID04.05 sublimation. ID04.06 virtual experiment.</p> <p><b>Experiment 4.4:</b> Effect of heat page 149 <b>Experiment 4.5:</b> From ice to steam page 155</p> <p><b>SBD:</b> 4.2 page 63, Observing changes in water Good previewing activity</p> <p><b>SBD:</b> 4.5 page 68, Can matter skip states?</p> <p><b>Review questions:</b> page 133</p> <p><b>Big Ideas, Review questions:</b> page 134</p> <p><b>C2C lesson 7 unit 1</b></p>	<p><b>Comprehension segment</b> Classroom Strategy - Science connection overview (PG184 Buehl –template on Pg 255)</p> <p><b>Review questions:</b> page 131</p> <p><b>C2C lesson 6 unit 1</b></p> <p><b>School wide imperatives (SWI):</b> explicitly teach CCE <b>describing, Making inferences</b> based on observations of the slime.</p> <p>Review lab safety Develop an aim</p>
<p>3 27/07/20</p>	<p><b><u>Learning Sequence 3</u></b> <b>TOPIC: Review scientific writing</b></p> <ol style="list-style-type: none"> <li>1. Understand how to write a rationale</li> <li>2. Understand what a fair test is and the importance of fair testing</li> <li>3. Understand what independent, dependent and controlled variables are and be able to choose these in an experiment</li> </ol> <p><b>OBI7: Pages 14 – 41</b></p> <p><b>Essential resources worksheet</b></p>	<p><b><u>Learning Sequence 3</u></b> <b>TOPIC: Properties of matter research and writing lesson</b></p> <ol style="list-style-type: none"> <li>1. Construct a rationale to demonstrate knowledge of the topic of diffusion.</li> <li>2. Understand the links between heat, diffusion, and the particle model.</li> </ol> <p><b>OBI8:</b> page 140-155 <b>Comprehension segment</b> Energy in Particles Pg 151 Classroom Strategy – Vocabulary Overview guide (pg 217 Buehl – template on pg 259)</p> <p><b>Experiment:</b> Diffusion of food colouring in hot vs cold water</p> <p><b>Alternative SBD:</b> 4.3 page 65, It's heating up</p>	<p><b><u>Learning Sequence 3</u></b> <b>TOPIC: Properties of matter practical</b></p> <ol style="list-style-type: none"> <li>1. Investigate the rate of diffusion of substances in water</li> <li>2. Understand the links between heat, diffusion, and the particle model.</li> <li>3. Identify independent, dependent, and controlled variables.</li> <li>4. Complete a risk assessment</li> </ol> <p><b>OBI8:</b> page 140-155 <b>Comprehension segment</b> Energy in Particles Pg 151 Classroom Strategy – Vocabulary Overview guide (pg 217 Buehl – template on pg 259)</p> <p><b>Experiment:</b> Diffusion of food colouring in hot vs cold water</p>

		<p><b>Review questions:</b> page 148</p> <p><b>Review questions:</b> page 152</p> <p><b>Big Ideas, Review questions:</b> page 157</p> <p><b>C2C lesson 7 unit 1</b></p>	<p><b>Alternative SBD:</b> 4.3 page 65, It's heating up</p> <p><b>Review questions:</b> page 148</p> <p><b>OBI8:</b> page 132-134, 154  <b>Comprehension segment</b>  Changing state Pg132-133  Classroom strategy – Vocabulary Overview Guide (pg 217  Buehl – template on pg 259)</p> <p><b>obook:</b> ID04.04 interactive activity. ID04.05 sublimation.  ID04.06 virtual experiment.</p> <p><b>Experiment 4.4:</b> Effect of heat page 149  <b>Experiment 4.5:</b> From ice to steam page 155</p> <p><b>SBD:</b> 4.2 page 63, Observing changes in water  Good previewing activity</p> <p><b>SBD:</b> 4.5 page 68, Can matter skip states?</p> <p><b>Review questions:</b> page 133</p> <p><b>Big Ideas, Review questions:</b> page 134</p> <p><b>C2C lesson 7 unit 1</b></p>
<p>4 03/08/20</p>	<p><b><u>Learning Sequence 4</u></b>  <b>TOPIC: Analysing and interpreting Data</b></p> <ol style="list-style-type: none"> <li>Students will be able to analyse and interpret experimental data from diffusion practical.</li> <li>Graphing, interpreting graphs, and data analysis skills.</li> </ol> <p><a href="http://www.middleschoolchemistry.com/lessonplans/chapter4/lesson3">http://www.middleschoolchemistry.com/lessonplans/chapter4/lesson3</a></p>	<p><b><u>Learning Sequence 4</u></b>  <b>TOPIC: Properties of Matter- Changing states</b></p> <ol style="list-style-type: none"> <li>Be able to interpret phase change graphs showing a substances boiling and melting point</li> <li>Be able to explain applications of changes of state in an everyday context</li> </ol> <p><b>OBI8:</b> page 132-134, 154  <b>Comprehension segment</b>  Changing state Pg132-133</p>	<p><b><u>Learning Sequence 4</u></b>  <b>TOPIC: Properties of matter- Density</b></p> <ol style="list-style-type: none"> <li>Understand that different substances have different densities.</li> <li>Be able to describe density as a measure of mass per volume.</li> <li>Perform density calculations</li> <li>Analyse and graph experimental data</li> </ol> <p><b>OBI8:</b> page 128-131  <b>Comprehension segment</b></p>

		<p>Classroom strategy – Vocabulary Overview Guide (pg 217 Buehl – template on pg 259)</p> <p><b>obook:</b> ID04.04 interactive activity. ID04.05 sublimation. ID04.06 virtual experiment.</p> <p><b>Experiment 4.4:</b> Effect of heat page 149  <b>Experiment 4.5:</b> From ice to steam page 155</p> <p><b>SBD:</b> 4.2 page 63, Observing changes in water  Good previewing activity</p> <p><b>SBD:</b> 4.5 page 68, Can matter skip states?</p> <p><b>Review questions:</b> page 133</p> <p><b>Big Ideas, Review questions:</b> page 134</p>	<p>Classroom Strategy – Vocabulary Overview guide (pg 217 Buehl – template on pg 259)</p> <p>Experiment- The density Den (OB18), density towers</p>
<p>5 10/08/20</p>	<p><b><u>Learning Sequence 4</u></b>  <b>TOPIC: Properties of matter- Viscosity Theory</b></p> <ol style="list-style-type: none"> <li>1. Understand and be able to explain the links between viscosity and the particle theory</li> <li>2. Describe the differences between adhesion and cohesion</li> </ol> <p><b>OB18:</b> page 140-155  <b>Comprehension segment</b>  Energy in Particles Pg 151  Classroom Strategy – Vocabulary Overview guide (pg 217 Buehl – template on pg 259)</p> <p><b>Alternative SBD:</b> 4.3 page 65, It's heating up</p> <p><b>Review questions:</b> page 148</p> <p><b>Review questions:</b> page 152</p> <p><b>Big Ideas, Review questions:</b> page 157</p>	<p>Catch up/revision</p>	<p><b>FORMATIVE</b></p>

<p>6 17/08/20</p>	<p><b><u>Learning Sequence 5</u></b>  <b>TOPIC: Chemical Reactions (Lesson 1 of 2)</b></p> <ol style="list-style-type: none"> <li>1. Explore physical and chemical changes in substances</li> <li>2. Identify sources of systematic and random errors</li> </ol> <p><b>OBI8: page 181-189</b>  <b>Comprehension segment</b>  Chemical reactions – Pg 182  Classroom Strategy – Vocabulary Overview guide (pg 217  Buehl – template on pg 259)</p> <p><b>Practivity 5.4: Making Caramel</b>  <b>Experiment 5.2: Reacting iron with copper sulphate</b>  <b>Experiment 5.3: Observing Chemical Reactions</b>  <b>Experiment 5.4: Comparing reactants and products</b></p> <ol style="list-style-type: none"> <li>1. Understand how we use chemical reactions</li> </ol> <p><b>OBI8: page 190-196</b></p> <p><b>Practivity 5.5: Flame Tests</b></p>	<p><b><u>Learning Sequence 5</u></b>  <b>TOPIC: Chemical Reactions (Lesson 2 of 2)</b></p> <ol style="list-style-type: none"> <li>1. Explore physical and chemical changes in substances</li> </ol> <p><b>OBI8: page 181-189</b>  <b>Comprehension segment</b>  Chemical reactions – Pg 182  Classroom Strategy – Vocabulary Overview guide (pg 217  Buehl – template on pg 259)</p> <p><b>Practivity 5.4: Making Caramel</b>  <b>Experiment 5.2: Reacting iron with copper sulphate</b>  <b>Experiment 5.3: Observing Chemical Reactions</b>  <b>Experiment 5.4: Comparing reactants and products</b></p> <ol style="list-style-type: none"> <li>2. Understand how we use chemical reactions</li> </ol> <p><b>OBI8: page 190-196</b></p> <p><b>Practivity 5.5: Flame Tests</b></p>	<p><b>Handout Student Experiment</b>  <b>TOPIC: Student Experiment Initial Prac</b></p> <ol style="list-style-type: none"> <li>1. Students to complete initial prac investigating the flow rate of water.</li> <li>2. Students to decide on modifications (extensions and refinements) to practical (they will be able to choose from a small list of substances)</li> </ol>
<p>7 24/08/20</p>	<p><b><u>Student experiment</u></b>  <b>TOPIC: Review Scientific Writing</b></p> <ol style="list-style-type: none"> <li>1. Understand the conventions of scientific writing (use of third person, scientific language, explain vs. describe, etc.)</li> <li>2. Be able to write a hypothesis for the experiment</li> <li>3. Write a short rationale that outlines the scientific theory behind the experiment</li> </ol> <p><b>OBI7: Pages 14 – 41</b></p> <p><b>Essential resources worksheet</b></p>	<p><b><u>Student experiment</u></b>  <b>TOPIC: Modifications and Risks</b></p> <ol style="list-style-type: none"> <li>1. Be able to justify the modifications (extensions and refinements) to the experiment.</li> <li>2. Describe the methodology</li> <li>3. Write a risk assessment</li> </ol>	<p><b><u>Student experiment</u></b>  <b>TOPIC: Conduct Modified Practical</b></p> <ol style="list-style-type: none"> <li>1. Conduct modified practical</li> <li>2. Collect accurate data</li> </ol>
<p>8 31/08/20</p>	<p><b><u>Student experiment</u></b>  <b>TOPIC: Data Analysis</b></p> <ol style="list-style-type: none"> <li>1. Complete flow rate calculations</li> </ol>	<p><b><u>Student experiment- Data Analysis</u></b></p> <ol style="list-style-type: none"> <li>1. Identify the trends, patterns, and relationships in the data</li> <li>2. Interpret the evidence using scientific theory</li> </ol>	<p><b><u>STUDENT EXPERIMENT</u></b></p>

	<p>2. Construct a graph to show trends, patterns, and relationships</p> <p><b>OBI7: Pages 14 – 41</b></p> <p><b>Essential resources worksheet</b></p>	<u>DRAFT DUE</u>	<p>1. Identify systematic and random errors in the experiment and how they could have affected the results.</p>
<p>9 07/09/20</p>	<p><b><u>STUDENT EXPERIMENT DUE</u></b></p> <p>1. Catch up</p>	<u>Revision/Graphing/Data Analysis Practice</u>	<u>Revision/Graphing/Data Analysis Practice</u>
<p>10 14/09/20</p>	<b><u>Data Test- SUMMATIVE EXAM</u></b>		

## Resources

### Science textbooks and collection:

- Big Ideas 8 (book, and online content)
- Big Ideas 7 (book, and online content)
- Essential resources (book, also on collection)
- Science by doing (online and collection)
- Old textbooks
- Collection folders

### Comprehension and writing

- Buehl – comprehension strategies
- Writing books (given by school, cover how to write and CCE's)

### Online

- Science by doing (online and collection) <https://www.sciencebydoing.edu.au/>
- ASSIST website <http://assist.asta.edu.au/>
- ABC splash <http://splash.abc.net.au/home#/home>
- Scootle <https://www.scootle.edu.au/ec/p/home>