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| **Year level: 3/4/5** | **Learning Area: Science** | **Chemical Sciences** |
| **RELEVANT STATEMENTS FROM THE YEAR 3 ACHIEVEMENT STANDARD** | **RELEVANT STATEMENTS FROM THE YEAR 4 ACHIEVEMENT STANDARD**  | **RELEVANT STATEMENTS FROM THE YEAR 5 ACHIEVEMENT STANDARD** |
| **Science Understanding**At Standard, students use their understanding of the rotation of Earth, the behaviour of heat and its effect on materials to suggest explanations for everyday observations. They group living things based on observable features and distinguish them from non-living things.**Science as a Human Endeavour**Students describe how they can use science investigations to respond to questions.**Science Inquiry Skills**Students use their experiences to identify questions and make predictions about scientific investigations. They follow procedures to collect and record observations and suggest possible reasons for their findings, based on patterns in their data. Students describe how safety and fairness were considered and they use diagrams and other representations to communicate their ideas. | **Science Understanding**At Standard, students describe how materials can be used and [relate](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/relate) this to their [observable](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/observable) properties. They describe how contact and non-contact forces affect interactions between objects. Students discuss how natural processes and human activity cause changes to Earth’s surface. They describe relationships that assist the survival of living things and sequence key stages in the life cycle of a plant or animal.**Science as a Human Endeavour**Students identify that science is used to understand the world around them.**Science Inquiry Skills**Students follow instructions to identify investigable questions about [familiar](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/familiar) contexts and make predictions based on prior knowledge. They describe ways to conduct investigations and safely use equipment to make and record observations. Students use provided tables and construct column graphs to organise [data](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/data) and identify patterns. They suggest explanations for observations and compare their findings with their predictions. Students suggest reasons why a test was fair or not. They use formal and informal ways to communicate their observations and findings. | **Science Understanding**At Standard, students [classify](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/classify) solids, liquids and gases according to their [observable](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/observable) properties and behaviours. They describe everyday phenomena associated with the transfer of light. Students describe the key features of our solar [system](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/system). They [analyse](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/analyse) how the features of living things enables them to function in their environments.**Science as a Human Endeavour**Students discuss how scientific developments have affected people’s lives, help us solve problems and how science knowledge develops from many people’s contributions.**Science Inquiry Skills**Students follow instructions to pose questions for [investigation](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/investigation) and predict the effect of changing variables when planning an [investigation](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/investigation). They use equipment in ways that are safe and improve the accuracy of their observations. Students construct tables and graphs to organise [data](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/data) and identify patterns in the [data](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/data). They compare patterns in their [data](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/data) with predictions when suggesting explanations. Students describe ways to improve the fairness of their investigations, and communicate their ideas and findings. |
|  | **YEAR 3 CONTENT** | **←YEAR 3/4→****Conceptual links** | **YEAR 4 CONTENT** | **←YEAR 4/5→****Conceptual links** | **YEAR 5 CONTENT** |
| **Science understanding** | A change of state between solid and liquid can be caused by adding or removing heat | Change of stateSolids and liquids | Natural and processed materials have a range of physical properties that can influence their use | Natural and processed materialsPhysical and observable properties  | Solids, liquids and gases have different observable properties and behave in different ways |
| **Science as a human endeavour** | Banded with year 4 | Making predictionsScience and people | Science involves making predictions and describing patterns and relationshipsScience knowledge helps people to understand the effect of their actions | Testing predictionsPatterns and relationshipsScience in the community | Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributionsScientific knowledge is used to solve problems and inform personal and community decisions |
| **Science inquiry skills** | Banded with year 4 | Identify questions and make predictionsPlan investigations (with guidance)Record information and represent this informationCommunicate ideas, explanations and suggestions for improvements | With guidance, identify questions in familiar contexts that can be investigated scientifically and make predictions based on prior knowledgeWith guidance, plan and conduct scientific investigations to find answers to questions, considering the safe use of appropriate materials and equipment Consider the elements of fair tests and use formal measurements and digital technologies as appropriate, to make and record observations accuratelyUse a range of methods including tables and simple column graphs to represent data and to identify patterns and trends Compare results with predictions, suggesting possible reasons for findingsReflect on investigations, including whether a test was fair or notRepresent and communicate observations, ideas and findings using formal and informal representations | Pose questions and make predictionsPlan investigations and problem solveChange and measure variablesAccurately record and represent information Communicate ideas, explanations and provide suggestions for improvements | With guidance, pose clarifying questions and make predictions about scientific investigationsIdentify, plan and apply the elements of scientific investigations to answer questions and solve problems using equipment and materials safely and identifying potential risks Decide variables to be changed and measured in fair tests, and observe measure and record data with accuracy using digital technologies as appropriateConstruct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate Compare data with predictions and use as evidence in developing explanationsReflect on and suggest improvements to scientific investigationsCommunicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts |
| **🡨COMMON UNDERSTANDINGS→*****Some suggested common understandings that could be applied across year groups for teaching*** |
| * Define change of state and compare observable and physical properties of solids and liquids.
* Define observable and physical properties of natural and processed materials.
* Understand how science helps people and the wider community.
* Ask questions and make predictions about scientific investigations.
* Apply science understanding to these investigations to help make predictions, explain results and discuss observations.
* What is a fair test, and how can an investigation be improved?
* Collect, record and represent data effectively?
* Understand variables to change, keep the same, and measure.
* Consider and apply safe practices in science.
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| **SUGGESTED LEARNING EXPERIENCES** ***Ensure meaningful learning experiences explore the above common understandings*** |
| * What are the physical AND observable properties of these common items/materials, e.g. an ice block, an air filled balloon and a brick?
* Consider various foods and the physical and observable qualities identified? The addition of heat to chocolate, an egg, popcorn and water. Compare the reversible and irreversible changes observed.
* Record and communicate observations and findings in a variety of ways.
* Develop tasks and investigations using ice to demonstrate the change between a solid and a liquid caused by adding and removing heat; and the different observable properties of water as a solid, liquid and gas. What investigative questions may be explored/developed? <http://www.bbc.co.uk/bitesize/ks2/science/materials/solids_liquids_gases/read/1/>
* Develop an understanding of fair testing and improving the accuracy of investigations.
* Heating up and cooling down (year 3 sample assessment task online, Heating up and cooling down).
* Identify and classify natural and processed materials based on their physical properties and use. Collect and record this information in graphs, identify patterns in this data and make suggestions for their observations.
* Classroom materials, properties and uses (year 4 sample assessment task online, Classroom materials, properties and uses).
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| **SUGGESTED ASSESSMENT** ***Consider the learning experiences and identify the points of assessment for each year level (against the year level Achievement Standard)*** |
| **Year 3** | **Year 4** | **Year 5** |
| Sample assessment task online, Heating up and cooling down.Write a procedure based on an investigation conducted in the classroom, identify questions in familiar contexts that can be investigated scientifically and make predictions based on prior knowledge. | Sample assessment task online, Classroom materials, properties and uses.Write a procedure based on an investigation conducted in the classroom, identify questions in familiar contexts that can be investigated scientifically and make predictions based on prior knowledge. | Develop a tablethatclassif[ies](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/classify) solids, liquids and gases according to their [observable](http://k10outline.scsa.wa.edu.au/home/teaching/curriculum-browser/science-v8/overview/glossary/observable) properties and behaviours.Write a procedure based on an investigation conducted in the classroom, pose clarifying questions and make predictions about scientific investigations. |
| **CONSIDERATIONS WHEN LINKING THE ENGLISH CURRICULUM*****What authentic connections can be made across learning areas to develop connected programs?***  | **NECESSARY CONSIDERATIONS FOR MATHEMATICS PROGRAM*****What authentic connections can be made across learning areas to develop connected programs?***  |
| Creating textsUse of software *Comprehension strategies**Reading process**Vocabulary* | **Statistics and Probability**ChanceData representation and interpretation |