Year Level Description: Science
The science inquiry skills and science as a human endeavour strands are described across a two-year band. In their planning, schools and teachers refer to the expectations outlined in the achievement standard and also to the content of the science understanding strand for the relevant year level to ensure that the two strands are addressed over the two-year period. The three strands of the curriculum are interrelated and their content is taught in an integrated way. The order and detail in which the content descriptions are organised into teaching and learning programs are decisions to be made by the teacher.

Incorporating the key ideas of science

Over Years 3 to 6, students develop their understanding of a range of systems operating at different time and geographic scales.

Year Level Description: Maths
The proficiency strands encompass the proficiencies. Learning of mathematics. The achievement developed. They provide the language to describe how the content is explored or investigated. The proficiency strands are described across a two-year period. The three proficiency strands are addressed over the two-year period. The three strands of the curriculum are interrelated and their content is taught in an integrated way. The order and detail in which the content descriptions are organised into teaching and learning programs are decisions to be made by the teacher.

Year Level Description: Design Technologies
Learning in Design and Technologies builds on the range of concepts, skills and processes developed in previous years. In Year 4, students have opportunities to learn about technologies in society as they create solutions in at least one of the following technologies contexts: Engineering principles and systems; Food and fibre production (includes Food specialisations in this year); and Materials and technologies specialisations. Students are provided with opportunities to design and produce products, services and sustainable environments.

Students’ sense of ownership of their ideas is further developed and expanded, with a greater focus on community needs when making decisions about designs. They have opportunities to develop a broader understanding of the concept of themselves as consumers. Students begin to explore and learn to harness their creative, innovative and imaginative ideas.

Students become aware of the design characteristics and properties of materials, and the use of components and equipment when planning solutions. They have opportunities to reflect on actions to refine design solutions through the use of decision-making skills. Students engage in learning to explore the social and environmental sustainability implications of existing products and processes to raise awareness of their place in the world. Students explore the role of those working in design and technologies occupations, and how they think about the way a product might change in the future.

Students broaden the techniques they use to clarify and present ideas, such as drawing annotated diagrams for documenting design and production ideas.

Personalia and Social Capability Skills:

- **Self-awareness**
  - describe the influence that people, situations and events have on their emotions
  - describe personal strengths and challenges and identify skills they wish to develop
  - reflect on personal strengths and achievements, based on self-assessment strategies and teacher feedback

- **Social management**
  - identify and describe strategies to manage and moderate emotions in increasingly unfamiliar situations
  - explain the value of self-discipline and goal-setting in helping them to learn

- **Social awareness**
  - discuss the value of diverse perspectives and describe a point of view that is different from their own
  - identify the various communities to which they belong and what they can do to make a difference

- **Social management**
  - identify communication skills that enhance relationships for particular groups and purposes
  - describe characteristics of cooperative behaviour and identify evidence of these in group activities

- **Personal and Social Capability Skills**
  - contribute to and predict the consequences of group decisions in a range of situations
  - identify a range of conflict resolution strategies to negotiate positive outcomes to problems

- **Personal and Social Capability Skills**
  - discuss the concept of leadership and identify situations where it is appropriate to adopt this role

Critical and Creative Thinking:

- **Inquiring – identifying, exploring and organising information and ideas**
  - pose questions to expand their knowledge about the world
  - identify main ideas and select and clarify information from a range of sources

- **Generating ideas, possibilities and actions**
  - expand on known ideas to create new and imaginative combinations
  - explore situations using creative thinking strategies to propose a range of alternatives

- **Reflecting on thinking and processes**
  - reflect on, explain and check the processes used to come to conclusions

- **Analysing, synthesising and evaluating reasoning and procedures**
  - identify and apply appropriate reasoning and thinking strategies for particular outcomes

- **Personal and Social Capability Skills**
  - draw on prior knowledge and use evidence when choosing a course of action or drawing a conclusion

- **Critical and Creative Thinking**
  - explain and justify ideas and outcomes

STEM: Planning for Integration

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<tr>
<th>Year 4</th>
<th>Term 1</th>
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<td>Teacher</td>
<td>Room:</td>
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- **Investigating with ICT**
  - use ICT to plan an information search or generation of information, recognising some pattern within the information

- **Investigating with ICT**
  - locate, retrieve or generate information from a range of digital sources

- **Creating with ICT**
  - use ICT to generate ideas and plan solutions

- **Communicating with ICT**
  - use appropriate ICT tools safely to share and exchange information with appropriate known audiences

- **Managing and operating ICT**
  - identify and independently operate a range of devices, software, functions and commands, taking into consideration ergonomics when operating appropriate ICT systems, and seek solutions when encountering a problem

- **Managing and operating ICT**
  - identify and compare the use of the main components of different ICT systems

- **Managing and operating ICT**
  - manage and maintain digital data using common methods
Mathematics

**Number and Algebra**

Investigate and use the properties of odd and even numbers. Recognise, represent and order numbers to at least tens of thousands. Apply place value to partition, rearrange and regroup numbers to at least tens of thousands to assist calculations and solve problems. Investigate number sequences involving multiples of 3, 4, 6, 7, 8 and 9. Recall multiplication facts up to 10 × 10 and related division facts.

Develop efficient mental and written strategies and use appropriate digital technologies for multiplication and division where there is no remainder. Investigate equivalent fractions used in contexts. Count by quarters halves and thirds, including with mixed numerals. Locate and represent these fractions on a number line. Recognise that the place value system can be extended to tenths and hundredths. Make connections between fractions and decimal notation.

Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies. Explore and describe number patterns resulting from performing multiplication. Solve word problems by using number sentences involving multiplication or division where there is no remainder. Find unknown quantities in number sentences involving addition and subtraction and identify equivalent number sentences.

**Measurement and Geometry**

Use scaled instruments to measure and compare lengths, masses, capacities and temperatures. Compare objects using familiar metric units of area and volume. Convert between units of time. Use ‘am’ and ‘pm’ notation and solve simple time problems. Compare the areas of regular and irregular shapes by informal means. Compare and describe two dimensional shapes that result from combining and splitting common shapes, with and without the use of digital technologies. Use simple scales, legends and directions to interpret information contained in basic maps. Create symmetrical patterns, pictures and shapes with and without digital technologies. Compare angles and classify them as equal to, greater than, or less than, a right angle.

**Statistics and Probability**

Describe possible everyday events and order their chances of occurring. Identify everyday events where one cannot happen if the other happens. Identify events where the chance of one will not be affected by the occurrence of the other. Select and trial methods for data collection, including survey questions and recording sheets. Construct suitable data displays, with and without the use of digital technologies, from given or collected data. Include tables, column graphs and picture graphs where one picture can represent many data values. Evaluate the effectiveness of different displays in illustrating data features including variability.

Science

**Science Understanding**

Living things have life cycles. Living things depend on each other and the environment to survive. Natural and processed materials have a range of physical properties that can influence their use. Earth’s surface changes over time as a result of natural processes and human activity. Forces can be exerted by one object on another through direct contact or from a distance.

**Science as a Human Endeavour**

Science involves making predictions and describing patterns and relationships. Science knowledge helps people to understand the effect of their actions. Science inquiry skills:

- With guidance, identify questions in familiar contexts that can be investigated scientifically and make predictions based on prior knowledge.
- With guidance, plan and conduct scientific investigations to find answers to questions, considering the 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 accurately.
- Use 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 findings.
- Reflect on investigations, including whether a test was fair or not.
- Represent and communicate observations, ideas and findings using formal and informal representations.

**Design & Technologies**

**Knowledge and Understanding**

Role of people in design and technologies occupations. Ways products, services and environments are designed to meet community needs, including consideration of sustainability. Forces, and the properties of materials, affect the behaviour of a product or system. Types of technologies used in food and fibre systems and components for a range of purposes.

**Processes and Production Skills**

Define a sequence of steps to design a solution for a given task. Identify and choose the appropriate resources from a given set. Develop and communicate design ideas and decisions using annotated drawings and appropriate technical terms. Select, and safely use, appropriate components and equipment to make solutions. Use criteria to evaluate and justify simple design processes and solutions. Work collaboratively to safely plan and publish a sequence of steps.

**Digital Technologies**

**Knowledge and Understanding**

Digital systems and peripheral devices are used for different purposes and can store and transmit different types of data. Different types of data, and the same data, can be represented in different ways.

**Processes and Production Skills**

Collect and present different types of data for a specific purpose using software. Use simple visual programming environments that include a sequence of steps (algorithm) involving decisions made by the user (branching). Work with others to create and communicate ideas and information safely, using agreed protocols (netiquette). Define a sequence of steps to design a solution for a given task. Identify and choose the appropriate resources from a given set. Develop and communicate design ideas and decisions using annotated drawings and appropriate technical terms. Select, and safely use, appropriate components and equipment to make solutions. Use criteria to evaluate and justify simple design processes and solutions. Work collaboratively to safely plan and publish a sequence of steps.

Mathematics: Achievement Standard

By the end of Year 4, students apply the observable properties of materials to explain how objects and materials can be used. They describe how contact and non-contact forces affect interactions between objects. They 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. They identify when science is used to understand the effect of their actions. Students follow instructions to identify investigable questions about familiar contexts and make predictions based on prior knowledge. They describe ways to conduct investigations and safely use equipment to make and record observations with accuracy. They use provided tables and column graphs to organise data and identify patterns. Students suggest explanations for observations and compare their findings with their predictions. They suggest reasons why a test was fair or not. They use formal and informal ways to communicate their observations and findings.

Design & Technologies: Achievement Standard

By the end of Year 4, students choose appropriate strategies for calculations involving multiplication and division. They recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places. Students solve simple purchasing problems. They identify and explain strategies for finding unknown quantities in number sentences. They describe number patterns resulting from multiplication. Students compare areas of regular and irregular shapes using informal units. They solve problems involving time duration. They interpret information contained in maps. Students identify dependent and independent events. They describe different methods for data collection and representation, and evaluate their effectiveness. Students use the properties of odd and even numbers. They recall multiplication facts to 10 × 10 and related division facts. Students locate familiar fractions on a number line. They continue number sequences involving multiples of single digit numbers. Students use scaled instruments to measure temperatures, lengths, shapes and objects. They convert between units of time. Students create symmetrical shapes and patterns. They classify angles in relation to a right angle. Students list the probabilities of everyday events. They construct data displays from given or collected data.

Digital Technologies: Achievement Standard

To be developed in 2015 using (assessment) work sample evidence to ‘set’ standards through paired comparisons.