Year 4 Level Description

The proficiency strands **understanding, fluency, problem-solving** and **reasoning** are an integral part of mathematics content across the three content strands: number and algebra, measurement and geometry, and statistics and probability. The proficiencies reinforce the significance of working mathematically within the content and describe how the content is explored or developed. They provide the language to build in the developmental aspects of the learning of mathematics. The achievement standards reflect the content and encompass the proficiencies.

At this year level:

- **understanding** includes making connections between representations of numbers, partitioning and combining numbers flexibly, extending place value to decimals, using appropriate language to communicate times and describing properties of symmetrical shapes

- **fluency** includes recalling multiplication tables, communicating sequences of simple fractions, using instruments to measure accurately, creating patterns with shapes and their transformations and collecting and recording data

- **problem-solving** includes formulating, modelling and recording authentic situations involving operations, comparing large numbers with each other, comparing time durations and using properties of numbers to continue patterns

- **reasoning** includes using generalising from number properties and results of calculations, deriving strategies for unfamiliar multiplication and division tasks, comparing angles, communicating information using graphical displays and evaluating the appropriateness of different displays.

CURRICULUM	SEMESTER 1		SEMESTER 2	
	Term 1	**Term 2**	**Term 3**	**Term 4**
Unit description	Students develop understandings of: Number and place value — make connections between representations of numbers; partition and combine numbers flexibly; recall multiplication facts; formulate, model and record authentic situations involving operations; compare large numbers; generalise from number properties and results of calculations; and derive strategies for unfamiliar multiplication and division tasks Fractions and decimals — communicate sequences of simple fractions Patterns and algebra — use properties of numbers to continue patterns Using units of measurement — use appropriate language to communicate times, compare time durations and use instruments to accurately measure lengths Chance — compare dependent and independent events, describe probabilities of everyday events Data representation and interpretation — collect and record data, communicate information using graphical displays and evaluate the appropriateness of different displays. Location and transformation — investigate the features on maps and plans; identify the need for legends; investigate the language of location, direction and movement; find locations using turns and everyday directional language; identify cardinal points of a compass; investigate compass directions on maps; investigate the purpose of scale; apply scale to maps and plans; explore mapping conventions, plan and plot routes on maps; explore appropriate units of measurement and calculate distances using scales Geometric reasoning — identify angles, construct and label right angles, identify and construct angles not equal to a right angle, mark angles not equal to a right angle.	Students develop understandings of: • Number and place value — recognise, read and represent five-digit numbers; identify and describe place value in five-digit numbers; partition numbers using standard and non-standard place value parts; compare and order five-digit numbers; identify odd and even numbers; make generalisations about the properties of odd and even numbers; make generalisations about adding, subtracting, multiplying and dividing odd and even numbers; recall 3s, 6s and 9s facts; solve multiplication and division problems; use informal recording methods and strategies for calculations; apply mental and written strategies to computation • Fractions and decimals — revisit and develop understanding of the proportion and relationships between fractions in the halves family and thirds family, count and represent fractions on number lines, represent fractions using a range of models, solve fraction problems from familiar contexts • Money and financial mathematics — read and represent money amounts, investigate change, round to five cents, explore strategies to calculate change, solve problems involving purchases and the calculation of change, explore Asian currency and calculate foreign currencies • Shape — explore properties of polygons and quadrilaterals, identify combined shapes, investigate properties of shapes within tangrams, create polygons and combined shapes using tangrams • Location and transformation — investigate the features on maps and plans; identify the need for legends; investigate the language of location, direction and movement; find locations using turns and everyday directional language; identify cardinal points of a compass; investigate compass directions on maps; investigate the purpose of scale; apply scale to maps and plans; explore mapping conventions, plan and plot routes on maps; explore appropriate units of measurement and calculate distances using scales	Students develop understandings of: • Number and place value — interpret number representations; sequence number values; apply number concepts and place value understanding to the calculation of addition, subtraction, multiplication and division; develop fluency with multiplication fact families, apply mental and written computation strategies, recall multiplication and division facts and apply place value to partition and regroup numbers to assist calculations • Fractions and decimals — partition to create fraction families; identify, model and represent equivalent fractions; count by fractions; solve simple calculations involving fractions with like denominators, model and represent tenths and hundredths, make links between fractions and decimals, count by decimals, compare and sequence decimals • Money and financial mathematics — represent, calculate and round amounts of money required for purchases and change • Patterns and algebra — use equivalent addition and subtraction number sentences to find unknown quantities • Using units of measurement — use scaled instruments to measure and compare length, mass, capacity and temperature, measure areas using informal units and investigate standard units of measurement • Shape — compare the areas of regular and irregular shapes using informal units of area measurement • Location and transformation — investigate different types of symmetry; analyse and create symmetrical designs.	Students develop understandings of: • Number and place value — calculate addition and subtraction using a range of mental and written strategies, recall multiplication and related division facts, calculate multiplication and division using a range of mental and written strategies, solve problems involving the four operations, use estimation and rounding, apply mental strategies, add, subtract, multiply and divide two- and three-digit numbers • Fractions and decimals — count and identify equivalent fractions, locate fractions on a number line, read and write decimals, identify fractions and corresponding decimals, compare and order decimals (to hundredths) • Money and financial mathematics — calculate change to the nearest five cents, solve problems involving purchases • Patterns and algebra — use equivalent multiplication and division number sentences to find unknown quantities • Using units of measurement — use am and pm notation, solve simple time problems • Shape — measure area of shapes, compare the areas of regular and irregular shapes by informal means • Data representation and interpretation — write questions to collect data, collect and record data, display and interpret data.

ASSESSMENT		SEMESTER 1				SEMESTER 2					
		Term 1		Term 2		Term 3			Term 4		
		Identify & explain chance events AT1	Maps and angles AT2	Recall & use multiplication & division facts AT3	Properties odd even numbers AT4	Recognise and locate fractions AT5	Compare area & measure AT6	Investigating time AT7	Connect decimals & fractions AT8	Solving purchasing problems AT9	Analysing data AT10
Range and balance of summative assessment conventions	Technique	Test	Test	Test	Investigation MGI	Test	Test	Investigation MGI	Test	Test	Test
	Type of text	Short answer	Short answer	Short answer	Short answer	Short answer	Short answer	Project	Short answer	Short answer	Short answer
	Mode	Written	Written	Written	Written	Written	Written	Written	Written	Written	Written
	Conditions	Individual Test conditions	Individual Test conditions	Individual Test conditions	Individual Test conditions	Individual Test conditions	Individual Test conditions	Individual Test conditions	Individual Test conditions	Individual Test conditions	Individual Test conditions
Aspects of the achievement standard											
choose appropriate strategies for calculations involving multiplication and division				✓							
recognise common equivalent fractions in familiar contexts and make connections between fraction and decimal notations up to two decimal places						✓			✓		
solve simple purchasing problems										✓	
identify and explain strategies for finding unknown quantities in number sentences				✓							
describe number patterns resulting from multiplication				✓							
compare areas of regular and irregular shapes using informal units							✓				
solve problems involving time duration								✓			
interpret information contained in maps			✓								
identify dependent and independent events		✓									
describe different methods for data collection and representation, and evaluate their effectiveness											✓
use the properties of odd and even numbers					✓						
recall multiplication facts to 10 × 10 and related division facts				✓			✓				
locate familiar fractions on a number line						✓					

continue number sequences involving multiples of single digit numbers			✓								
use scaled instruments to measure temperatures, lengths, shapes and objects							✓				
convert between units of time								✓			
create symmetrical shapes and patterns							✓				
classify angles in relation to a right angle		✓									
list the probabilities of everyday events	✓										
construct data displays from given or collected data											✓

Term 1 Term 2 Term 3 Term 4 ✓ indicates opportunities that summative assessments provide for students to demonstrate evidence against aspects of the achievement standard

PROFICIENCIES

The Australian Curriculum: Mathematics proficiency strands are understanding, fluency, problem-solving and reasoning. They describe how content is explored or developed; that is, the thinking and doing of mathematics. The inclusion of the proficiencies in the curriculum is to ensure that student learning and student independence are at the centre of the curriculum. The curriculum focuses on developing increasingly sophisticated and refined mathematical proficiency skills. They enable students to respond to familiar and unfamiliar situations by employing mathematical strategies to make informed decisions and solve problems efficiently.

Understanding

Students build a robust knowledge of adaptable and transferable mathematical concepts. They make connections between related concepts and progressively apply the familiar to develop new ideas. They develop an understanding of the relationship between the 'why' and the 'how' of mathematics. Students build understanding when they connect related ideas, when they represent concepts in different ways, when they identify commonalities and differences between aspects of content, when they describe their thinking mathematically and when they interpret mathematical information.

Fluency

Students develop skills in choosing appropriate procedures; carrying out procedures flexibly, accurately, efficiently and appropriately; and recalling factual knowledge and concepts readily. Students are fluent when they calculate answers efficiently, when they recognise robust ways of answering questions, when they choose appropriate methods and approximations, when they recall definitions and regularly use facts, and when they can manipulate expressions and equations to find solutions.

Problem-solving

Students develop the ability to make choices, interpret, formulate, model and investigate problem situations, and communicate solutions effectively. Students formulate and solve problems when they use mathematics to represent unfamiliar or meaningful situations, when they design investigations and plan their approaches, when they apply their existing strategies to seek solutions, and when they verify that their answers are reasonable.

Reasoning

Students develop an increasingly sophisticated capacity for logical thought and actions, such as analysing, proving, evaluating, explaining, inferring, justifying and generalising. Students are reasoning mathematically when they explain their thinking, when they deduce and justify strategies used and conclusions reached, when they adapt the known to the unknown, when they transfer learning from one context to another, when they prove that something is true or false, and when they compare and contrast related ideas and explain their choices.