Year 6 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 describing properties of different sets of numbers, using fractions and decimals to describe probabilities, representing fractions and decimals in various ways and describing connections between them, and making reasonable estimations

- **fluency** includes representing integers on a number line, calculating simple percentages, using brackets appropriately, converting between fractions and decimals, using operations with fractions, decimals and percentages, measuring using metric units and interpreting timetables

- **problem-solving** includes formulating and solving authentic problems using fractions, decimals, percentages and measurements, interpreting secondary data displays and finding the size of unknown angles

- **reasoning** includes explaining mental strategies for performing calculations, describing results for continuing number sequences, explaining the transformation of one shape into another and explaining why the actual results of chance experiments may differ from expected results.

CURRICULUM	SEMESTER 1		SEMESTER 2	
	Term 1	**Term 2**	**Term 3**	**Term 4**
Unit description	Students develop understandings of: • **Number and place value** — identify and describe properties of prime and composite numbers, and select and apply mental and written strategies to problems involving all four operations • **Fractions and decimals** — order and compare fractions with related denominators, add and subtract fractions with related denominators, calculate the fraction of a given quantity and solve problems involving the addition and subtraction of fractions • **Money and financial mathematics** — investigate and calculate percentage discounts of 10%, 25% and 50% on sale items • **Using units of measurement** — solve problems involving the comparison of lengths and areas, and interpret and use timetables • **Chance** — represent the probability of outcomes as a fraction or decimal and conduct chance experiments • **Data representation and interpretation** — revise different types of data displays, interpret data displays, investigate the similarities and differences between different data displays, identify the purpose and use of different displays and identify the difference between categorical and numerical data.	Students develop understandings of: • **Number and place value** — select and apply mental and written strategies and Digital Technologies to solve problems involving multiplication and division with whole numbers, and identify, describe and continue square and triangular numbers • **Fractions and decimals** — apply mental and written strategies to add and subtract decimals, solve problems involving decimals, make generalisations about multiplying whole numbers and decimals by 10, 100 and 1 000, apply mental and written strategies to multiply decimals by one-digit whole numbers, and locate, order and compare fractions with related denominators and locate them on a number line • **Patterns and algebra** — continue and create sequences involving whole numbers and decimals, describe the rule used to create these sequences and explore the use of order of operations to perform calculations • **Using units of measurement** — make connections between volume and capacity • Shape — problem-solve and reason to create nets and construct models of simple prisms and pyramids • **Geometric reasoning** — make generalisations about angles on a straight line, angles at a point and vertically opposite angles, and use these generalisations to find unknown angles.	Students develop understandings of: • **Number and place value** — identify and describe properties of prime, composite, square and triangular numbers, multiply and divide using written methods including a standard algorithm, solve problems involving all four operations with whole numbers, locating and representing positive and negative integers and solving problems involving integers • **Fractions and decimals** — add and subtract fractions with related denominators, calculate a fraction of a quantity, multiply and divide decimals by powers of ten, add and subtract decimals, multiply decimals by whole numbers, divide numbers that result in tenths and hundredths and solve problems involving fractions and decimals • **Money and financial mathematics** — connect fractions and percentage, calculate percentages and discounts, calculate discounts of 10%, 25% and 50% on sale items • **Patterns and algebra** — create and complete sequences involving fractions and decimals, describe the rule used to create the sequence and apply the order of operations to aid calculations when solving problems • **Using units of measurement** — connect decimals to the metric system, convert between units of measure, comparing length and solve problems involving length and area and connect volume and capacity • **Location and transformation** — identify the four quadrants on a Cartesian plane, plot and locate ordered pairs in all four quadrants, applying one-step transformation and describe the effect of combinations of translations, reflections and rotations.	Students develop understandings of: • **Number and place value** — solve problems using the order of operations, solve multiplication and division problems using a written algorithm • **Fractions and decimals** — add, subtract and multiply decimals; divide decimals by whole numbers; calculate a fraction of a quantity and percentage discount; compare and evaluate shopping options • **Patterns and algebra** — represent number patterns in a table and graphically, use rules to continue patterns, write a rule to describe a pattern, apply the rule to find the value of unknown terms, solve integer problems, plot coordinates in all four quadrants • **Location and transformation** — apply translations, reflections and rotations to create symmetrical shapes • **Geometric reasoning** — measure and describe angles, apply generalisations about angles on a straight line, angles at a point and vertically opposite angles and apply in real-life contexts • **Chance** — conduct chance experiments; record data in a frequency table; calculate relative frequency; write probability as a fraction, decimal or per cent; compare observed and expected frequencies • **Data representation and interpretation** — compare primary and secondary data, source secondary data, explore data displays in the media, identify how displays can be misleading, represent data from a chance experiment, problem solve and reason by interpreting secondary data.

ASSESSMENT	SEMESTER 1				SEMESTER 2				
	Term 1		Term 2			Term 3			Term 4	
	Interpret compare data displays- AT1	Interpret & use timetables- AT2	Apply order operations- AT3	Investigating angles- AT4	Investigating pyramids & measurement- AT5	Number properties percentage discounts-AT6	Integers & transform- AT7	Calculate fractions & decimals- AT8	Describe probability & compare frequency- AT9	Inferring collected data AT10

Range and balance of summative assessment conventions	Technique	Test	Test	Test	Test	Investigation MGI	Test	Test	Test	Test	Investigation MGI
	Type of text	Short answer	Short answer	Short answer	Short answer	Practical project	Short answer	Short answer	Short answer	Short answer	Practical project
	Mode	Written	Written	Written	Written	Written	Written	Written	Written	Written	Written
	Conditions	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 & pairs	Test conditions Individual
Aspects of the achievement standard											
recognise the properties of prime, composite, square and triangular numbers							✔				
describe the use of integers in everyday contexts								✔			
solve problems involving all four operations with whole numbers		✔	✔				✔				
connect fractions, decimals and percentages as different representations of the same number							✔				
solve problems involving the addition and subtraction of related fractions									✔		
make connections between the powers of 10 and the multiplication and division of decimals									✔		
describe rules used in sequences involving whole numbers, fractions and decimals									✔		
connect decimal representations to the metric system and choose appropriate units of measurement to perform a calculation						✔			✔		
make connections between capacity and volume						✔			✔		
solve problems involving length and area						✔					
interpret timetables			✔								
describe combinations of transformations								✔			
solve problems using the properties of angles					✔						
compare observed and expected frequencies										✔	✔
interpret and compare a variety of data displays including those displays for two categorical variables		✔									✔
interpret secondary data displayed in the media											✔
locate fractions and integers on a number line								✔	✔		
calculate a simple fraction of a quantity									✔		
add, subtract and multiply decimals and divide decimals where the result is rational									✔		
calculate common percentage discounts on sale items							✔				
write correct number sentences using brackets and order of operations				✔							
locate an ordered pair in any one of the four quadrants on the Cartesian plane								✔			
construct simple prisms and pyramids						✔					
describe probabilities using simple fractions, decimals and percentages										✔	

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