MATHEMATICS

School Core Priority:	
PCRSS core Mathematics planning documents	**PCRSS English core teaching and learning programs**
• PCRSS Numeracy plan (to be developed in 2016) • PCRSS Basic Facts program (to be implemented in 2016) • PCRSS Numeracy Framework	• Maths CAFÉ

Australian Curriculum: Mathematics.

http://www.australiancurriculum.edu.au/mathematics/rationale

Learning mathematics creates opportunities for and enriches the lives of all Australians. The Australian Curriculum: Mathematics provides students with essential mathematical skills and knowledge in number and algebra, measurement and geometry, and statistics and probability. It develops the numeracy capabilities that all students need in their personal, work and civic life, and provides the fundamentals on which mathematical specialties and professional applications of mathematics are built.

Mathematics has its own value and beauty and the Australian Curriculum: Mathematics aims to instil in students an appreciation of the elegance and power of mathematical reasoning. Mathematical ideas have evolved across all cultures over thousands of years, and are constantly developing. Digital technologies are facilitating this expansion of ideas and providing access to new tools for continuing mathematical exploration and invention. The curriculum focuses on developing increasingly sophisticated and refined mathematical understanding, fluency, reasoning, and problem-solving skills. These proficiencies enable students to respond to familiar and unfamiliar situations by employing mathematical strategies to make informed decisions and solve problems efficiently.

The Australian Curriculum: Mathematics aims to ensure that students:
•are confident, creative users and communicators of mathematics, able to investigate, represent and interpret situations in their personal and work lives and as active citizens
•develop an increasingly sophisticated understanding of mathematical concepts and fluency with processes, and are able to pose and solve problems and reason in number and algebra, measurement and geometry, and statistics and probability
•recognise connections between the areas of mathematics and other disciplines and appreciate mathematics as an accessible and enjoyable discipline to study.
The Australian Curriculum: Mathematics is organised around the interaction of three content strands and four proficiency strands.

Number and Algebra	**Measurement and Geometry**	**Statistics and Probability**
Number and algebra are developed together, as each enriches the study of the other. Students apply number sense and strategies for counting and representing numbers. They explore the magnitude and properties of numbers. They apply a range of strategies for computation and understand the connections between operations. They recognise patterns and understand the concepts of variable and function. They build on their understanding of the number system to describe relationships and formulate generalisations. They recognise equivalence and solve equations and inequalities. They apply their number and algebra skills to conduct investigations, solve problems and communicate their reasoning.	Measurement and geometry are presented together to emphasise their relationship to each other, enhancing their practical relevance. Students develop an increasingly sophisticated understanding of size, shape, relative position and movement of two-dimensional figures in the plane and three-dimensional objects in space. They investigate properties and apply their understanding of them to define, compare and construct figures and objects. They learn to develop geometric arguments. They make meaningful measurements of quantities, choosing appropriate metric units of measurement. They build an understanding of the connections between units and calculate derived measures such as area, speed and density.	Statistics and probability initially develop in parallel and the curriculum then progressively builds the links between them. Students recognise and analyse data and draw inferences. They represent, summarise and interpret data and undertake purposeful investigations involving the collection and interpretation of data. They assess likelihood and assign probabilities using experimental and theoretical approaches. They develop an increasingly sophisticated ability to critically evaluate chance and data concepts and make reasoned judgements and decisions, as well as building skills to critically evaluate statistical information and develop intuitions about data.

The content strands are *Number and Algebra, Measurement and Geometry, and Statistics and Probability*. They describe what is to be taught and learnt.

In Mathematics, the key ideas are the proficiency strands of *Understanding, Fluency, Problem-solving and Reasoning*. The proficiency strands describe the actions in which students can engage when learning and using the content. While not all proficiency strands apply to every content description, they indicate the breadth of mathematical actions that teachers can emphasise.

Understanding	**Fluency**	**Problem-solving**	**Reasoning**
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.	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.	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.	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.

MATHEMATICS

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Australian CURRICULUM

MATHEMATICS			
PREP	By the end of the Foundation year, students make connections between number names, numerals and quantities up to 10. They compare objects using mass, length and capacity. Students connect events and the days of the week. They explain the order and duration of events. They use appropriate language to describe location. Students count to and from 20 and order small collections. They group objects based on common characteristics and sort shapes and objects. Students answer simple questions to collect information and make simple inferences.	**YEAR 1**	By the end of Year 1, students describe number sequences resulting from skip counting by 2s, 5s and 10s. They identify representations of one half. They recognise Australian coins according to their value. Students explain time durations. They describe two-dimensional shapes and three dimensional objects. Students describe data displays. Students count to and from 100 and locate numbers on a number line. They carry out simple additions and subtractions using counting strategies. They partition numbers using place value. They continue simple patterns involving numbers and objects. Students order objects based on lengths and capacities using informal units. They tell time to the half-hour. They use the language of direction to move from place to place. Students classify outcomes of simple familiar events. They collect data by asking questions, draw simple data displays and make simple inferences.
YEAR 2	By the end of Year 2, students recognise increasing and decreasing number sequences involving 2s, 3s and 5s. They represent multiplication and division by grouping into sets. They associate collections of Australian coins with their value. Students identify the missing element in a number sequence. Students recognise the features of three-dimensional objects. They interpret simple maps of familiar locations. They explain the effects of one-step transformations. Students make sense of collected information. Students count to and from 1000. They perform simple addition and subtraction calculations using a range of strategies. They divide collections and shapes into halves, quarters and eighths. Students order shapes and objects using informal units. They tell time to the quarter-hour and use a calendar to identify the date and the months included in seasons. They draw two-dimensional shapes. They describe outcomes for everyday events. Students collect, organise and represent data to make simple inferences.	**YEAR 3**	By the end of Year 3, students recognise the connection between addition and subtraction and solve problems using efficient strategies for multiplication. They model and represent unit fractions. They represent money values in various ways. Students identify symmetry in the environment. They match positions on maps with given information. Students recognise angles in real situations. They interpret and compare data displays. Students count to and from 10,000. They classify numbers as either odd or even. They recall addition and multiplication facts for single-digit numbers. Students correctly count out change from financial transactions. They continue number patterns involving addition and subtraction. Students use metric units for length, mass and capacity. They tell time to the nearest minute. Students make models of three-dimensional objects. Students conduct chance experiments and list possible outcomes. They conduct simple data investigations for categorical variables.
YEAR 4	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 x 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.	**YEAR 5**	By the end of Year 5, students solve simple problems involving the four operations using a range of strategies. They check the reasonableness of answers using estimation and rounding. Students identify and describe factors and multiples. They identify and explain strategies for finding unknown quantities in number sentences involving the four operations. They explain plans for simple budgets. Students connect three-dimensional objects with their two-dimensional representations. They describe transformations of two dimensional shapes and identify line and rotational symmetry. Students interpret different data sets. Students order decimals and unit fractions and locate them on number lines. They add and subtract fractions with the same denominator. Students continue patterns by adding and subtracting fractions and decimals. They use appropriate units of measurement for length, area, volume, capacity and mass, and calculate perimeter and area of rectangles. They convert between 12- and 24-hour time. Students use a grid reference system to locate landmarks. They measure and construct different angles. Students list outcomes of chance experiments with equally likely outcomes and assign probabilities between 0 and 1. Students pose questions to gather data, and construct data displays appropriate for the data.
YEAR 6	By the end of Year 6, students recognise the properties of prime, composite, square and triangular numbers. They describe the use of integers in everyday contexts. They solve problems involving all four operations with whole numbers. Students connect fractions, decimals and percentages as different representations of the same number. They solve problems involving the addition and subtraction of related fractions. Students make connections between the powers of 10 and the multiplication and division of decimals. They describe rules used in sequences involving whole numbers, fractions and decimals. Students connect decimal representations to the metric system and choose appropriate units of measurement to perform a calculation. They make connections between capacity and volume. They solve problems involving length and area. They interpret timetables. Students describe combinations of transformations. They solve problems using the properties of angles. Students compare observed and expected frequencies. They interpret and compare a variety of data displays including those displays for two categorical variables. They interpret secondary data displayed in the media. Students locate fractions and integers on a number line. They calculate a simple fraction of a quantity. They add, subtract and multiply decimals and divide decimals where the result is rational. Students calculate common percentage discounts on sale items. They write correct number sentences using brackets and order of operations. Students locate an ordered pair in any one of the four quadrants on the Cartesian plane. They construct simple prisms and pyramids. Students describe probabilities using simple fractions, decimals and percentages.		

Class: Teacher(s):

		Term 1	Term 2	Term 3	Term 4
		Unit 1	Unit 2	Unit 3	Unit 4
Mathematics	P–2	Understanding, Fluency, Problem solving and Reasoning students have opportunities to develop understandings of: **Prep** • Patterns and algebra (PA) - identify patterns and non-patterns, describe, continue and create growing and repeating patterns, use number to describe patterns, identify missing elements in a pattern • Number and place value (NPV) - count in ones forwards and backwards from different starting points, subitise to count small collections, quantify collections, identify quantities in different arrangements, connect number names, numerals and quantities • Using units of measurement (UUM) - sequence familiar events, compare the duration of events, directly and indirectly compare objects based on length, mass and capacity • Location and transformation (LT) - interpret the language of location, follow and give simple instructions, describe position • Data representation and interpretation (DRI) - answer simple questions, pose simple questions, identify information gathered by asking and answering questions **Year 1** • Number and place value (NPV) - sequence numbers, describe growing patterns, investigate the twos number sequence, represent 2-digit numbers, investigate parts and whole of quantities, show standard partitioning of 'teen' numbers, investigate subtraction, represent and solve simple addition and subtraction problems • Using units of measurement (UUM) - sequence days of the week and months of the year, investigate the features and function of calendars, record significant events, compare time durations, investigate length, compare lengths using direct comparisons, make indirect comparisons of length, measure lengths using uniform informal units. • Data representation & interpretation (DRI) - gather data (by asking suitable questions), record data in a list & table, display data (sorting, stacking or by pictorial representation), describe displays • Chance (C) - identify outcomes of familiar events that involve chance, describe events as 'will happen', 'won't happen' or 'might happen'. **Year 2** • Using units of measurement (UUM) - order days of the week and months of the year, use calendars to record and plan significant events, connect seasons to the months of the year, compare lengths using direct comparison, compare lengths using indirect comparison, measure and compare lengths using non-standard units • Number and place value (NPV) - count collections in groups of ten, represent two-digit numbers, connect two-digit number representations, partition two-digit numbers, use the twos, fives and tens counting sequence, investigate twos, fives and tens number sequences, representing addition and subtraction, use part-part-whole relationships to solve problems, connect part-part-whole understanding to number facts, recall addition number facts • Data representation & interpretation (DRI) - collect simple data, record data in lists & tables, display data in a picture graph, describe outcomes of data investigations • Chance (C) - identify every day events that involve chance, describe chance outcomes, describe events as likely, unlikely, certain, impossible 	Understanding, Fluency, Problem solving and Reasoning, students have opportunities to develop understandings of: **Prep -** Using units of measurement (UUM) - compare the length of objects using direct comparison, compare the height of objects, describe the thickness and length of objects, compare the length of objects using indirect comparison, describe the duration of events, compare and order durations Shape (S) - compare and sort objects based on shape and function, name familiar three-dimensional objects, construct using familiar three-dimensional objects, copy and describe lines, describe the shape of faces of objects, sort and describe familiar two-dimensional shapes Number and place value (NPV) - recall forwards and backwards counting sequences, subitise collections to five, count to identify how many, represent counting sequences, compare quantities, connect number names and quantities, sequence quantities, identify parts of a whole, represent different partitioning of a whole, describe a quantity by referring to its parts Location and transformation (LT) - identify and describe pathways, give and follow movement directions, represent movement paths, describe locations Patterns and algebra (PA) - copy and describe repeating patterns, continue repeating patterns, describe repeating patterns using number **Year 1-** Patterns and algebra (PA)- investigate repeating and growing patterns, connect counting sequences to growing patterns, represent the tens number sequence Number and place value (NPV) - represent and record the tens number sequence, represent two-digit numbers, standard partitioning of two-digit numbers, investigate equality, represent, record and solve simple addition and subtraction problems, identify addition problems, apply addition strategies, record subtraction, represent multiples of 10, compare and order numbers, partition two-digit numbers, partition to make equal parts, represent and record counting sequences, describe number patterns Location and transformation (LT) - explore and identify location, investigate position, direction and movement, interpret directions Fractions and decimals (FD) - investigate wholes and halves Using units of measurement (UUM) - explore and tell time to the hour Shape (S) - investigate the features of three-dimensional objects and two-dimensional shapes, describe two-dimensional shapes and three-dimensional objects Money and financial mathematics (MFM) - explore features of Australian coins **Year 2-** Shape (S) - recognise and name familiar two-dimensional shapes, describe the features of two-dimensional shapes, draw two-dimensional shapes, identify three- dimensional objects and describe the features of familiar three-dimensional objects Number and place value (NPV) - represent two-digit numbers, read and write two-digit numbers, partition two-digit numbers into place value parts, partition smaller numbers, and explore the 3s counting sequence, recall addition number facts, identify related subtraction number facts, describe part-part-whole relationships, solve addition and subtraction problems, add and subtract 2-digit numbers, represent multiplication, represent division, solve simple grouping and sharing problems Patterns and algebra (PA) - infer pattern rules from familiar number patterns, identify missing elements in counting patterns, solve simple number pattern problems Fractions and decimals (FD) - describe fractions as equal portions or shares, represent halves and quarters of shapes, represent halves and quarters of collections, represent eighths of shapes and collections, describe the connection between halves, fourths and eighths, solve simple number problems involving halves, fourths and eighths Using units of measurement (UUM) - use a calendar, identify the number of days in each month, relate months to seasons, tell time to the quarter hour, cover surfaces to represent area, compare area of shapes and surfaces, measure area with informal units Location and transformation (LT) - interpret simple maps of familiar locations, describe 'bird's-eye view', use appropriate language to describe locations, use simple maps to identify locations of interest Money and financial mathematics (MFM) - describe the features of Australian coins, count coin collections, identify equivalent combinations, identify $5 and $10 notes, count small collections of coins and notes	In this unit students apply a variety of mathematical concepts in real-life, lifelike and purely mathematical situations. Through the proficiency strands Understanding, Fluency, Problem solving and Reasoning, students have opportunities to develop understandings of: **Prep -** Using units of measurement (UUM) - make direct and indirect comparisons of mass, explain comparisons of mass, sequence familiar events in time order, sequence the days of the week, connect days of the week to familiar events Number and place value (NPV) - compare quantities, equalise quantities, combine small collections, represent addition situations, identify parts and the whole, partition quantities flexibly, share collections, identify equal parts of a whole Patterns and algebra (PA) - identify, copy, continue and describe growing patterns, describe equal quantities Data representations and interpretation (DRI) - identify questions, answer yes/no questions, use data displays to answer simple questions **Year 1 -** Number and place value (NPV) - count collections, represent and record two-digit numbers, identify and describe number relationships, flexibly partition two-digit numbers, partition numbers into more than two parts, represent, record and solve simple addition and subtraction problems, recall, represent and record the ones, twos, fives and tens number sequence, identify number patterns, represent and record two-digit numbers, standard place value partitioning of two-digit numbers, identify digit values, explore doubling and halving, locate numbers on linear representations, represent, record and solve simple subtraction problems Fractions and decimals (FD) - investigate wholes and halves Patterns and algebra (PA) - recall the ones, twos and tens counting sequences, explore number patterns, represent the fives number sequence Using units of measurement (UUM) - compare, measure and record lengths and capacity, describe durations in time, tell time to the half hour Money and financial mathematics (MFM) - recognise, describe and order Australian coins according to their value Location and transformation (LT) - give and follow directions, investigate position, direction and movement. **Year 2 -** Number and place value (NPV) - investigate numbers beyond 100, represent three-digit numbers, compare and order three-digit numbers, partition three-digit numbers, read and write three-digit numbers, recall addition number facts, identify related addition and subtraction facts, add and subtract with two-digit numbers, count to and from 1 000, represent three-digit numbers, compare and order three-digit numbers, partition three-digit numbers, read and write three-digit numbers, recall addition number facts, identify related addition and subtraction number facts, add and subtract with two-digit numbers, count large collections Fractions and decimals (FD) - divide shapes and collections into halves, quarters and eighths, solve simple fraction problems Using units of measurement (UUM) - compare and order objects, measure length, area and capacity using informal units, identify purposes for calendars, explore seasons and calendars of indigenous peoples Location and transformation (LT) - describe the effect of single-step transformations including turns, flips and slides, identify turns, flips and slides in real-world situations Money and financial mathematics - count collections of coins and notes, make money amounts, read and write money amounts, compare money amounts Shape - identify and describe polygons, identify and describe 2D shapes with curved sides, draw 2D shapes, describe the features of three-dimensional objects, identify three-dimensional objects in the environment Throughout this unit, students will require ready access to ICT at a whole-class, small-group and individual level.	In this unit students apply a variety of mathematical concepts in real-life, lifelike and purely mathematical situations. Through the proficiency strands - Understanding, Fluency, Problem solving and Reasoning - students have opportunities to develop understandings of: **Prep -** Number and place value (NPV) - represent quantities, compare numbers, match number names, numerals and quantities, identify parts within a whole, combine collections, make equal groups, describe the joining process Using units of measurement (UUM) - directly and indirectly compare the duration of events, directly and indirectly compare the mass, length and capacity of objects Location and transformation (LT) - describe position, describe direction Shape (S) - describe, name and compare shapes Data representation and interpretation (DRI) - generate yes/no questions, identify and interpret data collected. **Year 1 -** Fractions and decimals (FD) - identify a half Number and place value (NPV) - count collections beyond 100, skip count in ones, twos, fives and tens, identify missing elements, describe patterns created by skip counting, identify standard place value partitions of two-digit numbers, position and locate two-digit numbers on a number line, partition a number into more than two parts, explain how the order of joining parts does not affect the total, identify compatible numbers to 10, identify related addition and subtraction facts, subtract a multiple of 10 from a two-digit number, identify unknown parts in addition and subtraction, solve addition and subtraction problems, use standard and nonstandard partitioning of two-digit numbers, count in number patterns, model numbers with a range of materials, develop and refine mental strategies for addition and subtraction problems, represent part unknown Data representation and interpretation (DRI) - ask suitable questions to gather, collect, organise and represent data Chance (C) - classify events based on chance Patterns and algebra (PA) - investigate growing patterns, connect counting sequences to growing patterns, represent addition and subtraction number patterns Using units of measurement (UUM) - compare and sequence familiar events in time **Year 2 -** Data representation and interpretation - identify questions of interest based on one categorical variable, gather data relevant to a question, organise and represent data, interpret data displays Chance - explore the language of chance, make predictions based on data displays Number and place value - recall addition number facts, identify related addition and subtraction facts, add and subtract with two-digit and three-digit numbers, use place value to solve addition and subtraction problems, represent multiplication and division, connect multiplication and division Patterns and algebra - describe number patterns, identify missing elements in number patterns, identify and describe patterns created by skip counting, investigate features of number patterns resulting from adding twos, fives and tens, solve problems using number sentences for addition and subtraction Using units of measurement - directly compare mass of objects, use informal units to measure mass, length, area and capacity of objects and shapes, compare and order objects and shapes based on a single attribute, tell time to the quarter hour, directly compare mass of objects, use informal units to measure mass, length, area and capacity of objects and shapes, compare and order objects and shapes based on a single attribute Location and transformation - identify half and quarter turns, represent flips and slides, interpret simple maps Shape - draw two-dimensional shapes, describe three-dimensional objects Fractions and decimals - identify halves, quarters and eighths of shapes and collections. Throughout this unit, students will require ready access to ICT at a whole-class, small-group and individual level.

Class: **Teacher(s):**

		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
		Students apply a variety of mathematical concepts in real-life, life-like and purely mathematical situations. Through the proficiency strands - Understanding, Fluency, Problem solving and Reasoning students have opportunities to develop understandings of:							
Mathematics	2	•**Using units of measurement** - order days of the week and months of the year, use calendars to record and plan significant events, connect seasons to the months of the year, compare lengths using direct comparison, compare lengths using indirect comparison, measure and compare lengths using non-standard units •**Number and place value** - count collections in groups of ten, represent two-digit numbers, connect two-digit number representations, partition two-digit numbers, use the twos, fives and tens counting sequence, investigate twos, fives and tens number sequences, representing addition and subtraction, use part-part-whole relationships to solve problems, connect part-part-whole understanding to number facts, recall addition number facts 	•**Number and place value** - Represent 2-digit numbers, partition 2-digit numbers, round numbers to the nearest ten, add strings of single-digit numbers, add 2-digit numbers, solve simple addition and subtraction problems, represent multiplication and division, solve simple multiplication and division problems. •**Data representation and interpretation** - Collect simple data, record data in lists and tables, display data in a picture graph, describe outcomes of data investigations. •**Chance** - Identify everyday events that involve chance, describe chance outcomes, describe events as likely, unlikely, certain, impossible.	•**Shape** - recognise and name familiar 2D shapes, describe the features of 2D shapes, draw 2D shapes and describe the features of familiar 3D objects.  •**Number and place value** - represent two-digit numbers, partition two-digit numbers into place value parts, represent **addition situations.** •**Patterns and algebra** - identify the 3s counting sequence, describe number patterns, identify missing elements in counting patterns, and solve simple number pattern problems. •**Fractions and decimals** - represent halves and quarters of shapes, represent halves and quarters of collections, represent eighths of shapes and collections, describe the connection between halves, quarters and eighths, and solve simple number problems involving halves, quarters and eighths. •**Using units of measurement** - use a calendar, identify the number of days in each month, relate months to seasons, tell time to the quarter hour.	•**Number and place value** - recall addition number facts, identify related subtraction number facts, describe part-part-whole relationships, solve addition and subtraction problems, add and subtract 2-digit numbers, represent multiplication, represent division, solve simple grouping and sharing problems •**Location and transformation** - interpret simple maps of familiar locations, describe 'bird's-eye view', use appropriate language to describe locations, use simple maps to identify locations of interest •**Money and financial mathematics** - describe the features of Australian coins, count coin collections, identify equivalent combinations, identify $5 and $10 notes, count small collections of coins and notes •**Using units of measurement** - cover surfaces to represent area, compare area of shapes and surfaces, measure area with informal units.	•**Number and place value** - Investigating numbers beyond 100, represent three-digit numbers, compare and order three-digit numbers, partition three-digit numbers, read and write three-digit numbers, recall addition number facts, identify related addition and subtraction facts, add and subtract with two-digit numbers •**Fractions and decimals** - divide shapes and collections into halves, quarters and eighths, solve simple fraction problems •**Using units of measurement** - compare and order objects, and measure length, area and capacity using informal units •**Location and transformation** - describe the effect of single-step transformations including turns, flips and slides, and identify turns, flips and slides in real world situations.	•**Number and place value** - count to and from 1 000, represent three-digit numbers, compare and order three-digit numbers, partition three-digit numbers, read and write three- digit numbers, recall addition number facts, identify related addition and subtraction number facts, add and subtract with two-digit numbers, count large collections •**Money and financial mathematics** - count collections of coins and notes, make money amounts, read and write money amounts, compare money amounts •**Using units of measurement** - identify purposes for calendars, explore seasons and calendars •**Shape** - identify and describe polygons, identify and describe 2D shapes with curved sides, draw 2D shapes, describe the features of three-dimensional objects, identify three-dimensional objects in the environment.	•**Data representation and interpretation**: identify questions of interest based on one categorical variable, gather data relevant to a question, organise and represent data, interpret data displays. •**Chance:** explore the language of chance, make predictions based on data displays. •**Number and place value**: recall addition number facts, identify related addition and subtraction facts, add and subtract with 2-digit and 3-digit numbers, use place value to solve addition and subtraction problems, represent multiplication and division, connect multiplication and division. •**Patterns and algebra**: describe number patterns, identify missing elements in number patterns identify and describe patterns created by skip counting, investigate features of number patterns resulting from adding twos, fives and 10s, solve problems using number sentences for addition and subtraction. •**Using units of measurement**: directly compare mass of objects, use informal units to measure mass, length, area and capacity of objects and shapes, compare and order objects and shapes based on a single attribute.	•**Location and transformation** - identify half and quarter turns, represent flips and slides, interpret simple maps •Using units of measurement - tell time to the quarter hour, directly compare mass of objects, use informal units to measure mass, length, area and capacity of objects and shapes, compare and order objects and shapes based on a single attribute •Shape - draw two-dimensional shapes, describe three-dimensional objects •**Fractions and decimals** - identify halves, quarter and eights of shapes and collections •**Number and place value** - recall addition number facts, identify related addition and subtraction facts, add and subtract with 2-digit and 3-digit numbers, use place value to solve addition and subtraction problems, represent multiplication and division, connect multiplication and division
	3	•**Using units of measurement** - interpret and use a calendar, tell time to 5-minute intervals, measure length with non-standard units, identify one metre as a standard metric unit, represent a metre, measure with metres. •**Number and place value** - count to 1 000, investigate the 2s, 3s, 5s and 10s number sequences, identify odd and even numbers, represent 3-digit numbers, compare and order 3-digit numbers, partition numbers (standard and non-standard place value partitioning), match number representations, recall addition facts, add 2-digit numbers, represent and solve addition problems.	•**Number and place value** - add 2-digit and single-digit numbers, add and subtract 2-digit and 3-digit numbers, represent multiplication, solve simple problems involving multiplication, recall multiplication number facts, recall addition number facts and related subtraction facts. •**Data representation and interpretation** - collect simple data, record data in lists and tables, display data in a column graph, interpret and describe outcomes of data investigations. •**Chance** - identify everyday events that involve chance, conduct chance experiments, describe the outcomes of chance experiments, identify variations in the results of chance experiments. •**Using units of measurement** - select units to measure and compare lengths, identify the need for standard units, represent one metre, measure in metres.	•**Shape** - identify and describe the features of familiar three-dimensional objects, make models of 3D objects. •**Number and place value** - represent, compare and order three-digit numbers, partition three-digit numbers into place value parts, use place value to add and subtract numbers, recall addition number facts, add and subtract three-digit numbers, add and subtract numbers eight and nine, solve addition and subtraction word problems. •**Patterns and algebra** - infer pattern rules from familiar number patterns, identify and continue additive number patterns, identify missing elements in number patterns. •**Fractions and decimals** - describe fractions as equal portions or shares, represent halves, quarters and eighths of shapes and collections, represent thirds of shapes and collections.	•**Number and place value** - represent, compare and order 3-digit numbers, partition 3-digit numbers, investigate 1000, count to and beyond 1000, add and subtract 2-digit and 3-digit numbers, solve addition and subtraction word problems •**Location and transformation** - represent positions on a simple grid map, show full, half and quarter turns on a grid map, describe positions in relation to key features, represent movement and pathways on a simple grid map •**Geometric reasoning** - identify angles in real situations, construct angles with materials, compare the size of familiar angles in everyday situations •**Money and financial mathematics** - count collections of coins and notes, make and match equivalent combinations, calculate change from simple transactions, solve a range of simple problems involving money.	•**Number and place value** - count in sequences beyond 1000, represent and partition 4-digit numbers, use place value to add (written strategy), represent multiplication as arrays and repeated addition, identify part-part-whole relationships in multiplication situations, recall multiplication number facts, identify related division number facts •**Money and financial mathematics** - represent money amounts in different ways, count collections of coins and notes, choose appropriate coins and notes for shopping situations, calculate change and simple totals •**Fractions and decimals** - represent unit fractions of shapes and collections, represent familiar unit fractions symbolically, solve simple problems involving, halves, thirds, quarters and eighths •**Location and transformation** - identify examples of symmetry in the environment, fold shapes and images to show symmetry, classify shapes as symmetrical and non-symmetrical.	•**Using units of measurement** - measure using metres; compare, order and measure the mass of objects; measure the mass of familiar objects, using kilograms; say, read, write and show times (to five-minute intervals); tell time to the minute •**Patterns and algebra** - identify and describe number patterns involving three-digit numbers; identify and continue patterns resulting from addition and subtraction •**Number and place value** - recall addition and subtraction number facts; add and subtract with multiples of 10 and 100; add and subtract two-digit and three-digit numbers; add two-digit numbers, using a written strategy.	•**Number and place value:** recall addition and related subtraction number facts, use number facts to add and subtract larger numbers, use 'part-part-whole' thinking to interpret and solve addition and subtraction word problems, add and subtract using a written place value strategy, recall multiplication and related division facts, multiply 2-digit numbers by single-digit multipliers, interpret and solve multiplication and division word problems. •**Fractions and decimals:** identify, represent and compare familiar unit fractions and their multiples (shapes, objects and collections), describe the fractional relationship between parts and the whole, record fractions symbolically, recognise key equivalent fractions, solve simple problems involving fractions. •**Location and transformation:** represent symmetry, interpret simple maps and plans. •**Data representation and interpretation**: identify questions of interest based on one categorical variable, gather data relevant to a question, organise and represent data, interpret data displays. •**Chance**: explore the language of chance, make predictions based on data displays.	• **Geometric reasoning** - identify angles as measures of turn, compare angle sizes in everyday situations. • **Shape** - make models of three-dimensional objects, sort and describe three-dimensional objects with curved surfaces. • **Money and financial mathematics** - represent money values in multiple ways, count the change required for simple transactions to the nearest five cents. • **Using units of measurement** - measure, order and compare objects using familiar metric units of length, mass and capacity, tell time to the minute, investigate the relationship between units of time. • **Number and place value** - recall addition and related subtraction number facts, use number facts to add and subtract larger numbers, use 'part-part-whole' thinking to interpret and solve addition and subtraction word problems, add and subtract using a written place-value strategy, recall multiplication and related division facts.

Class: Teacher(s): Class: Teacher(s):

		Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8
		In this unit, students apply a variety of mathematical concepts in real-life, life-like and purely mathematical situations. Through the proficiency strands - Understanding, Fluency, Problem solving and Reasoning - students have opportunities to develop understandings of:							
Mathematics	4	•**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 tasks •**Fractions and decimals** - communicate sequences of simple fractions •**Using units of measurement (Time)** - use appropriate language to communicate times, compare time durations and use instruments to accurately measure lengths.	•**Number and place value** - making connections between representations of numbers; partitioning and combining numbers flexibly; recalling multiplication tables; formulating, modelling and recording authentic situations involving operations; comparing large numbers with each other; generalising from number properties and results of calculations and deriving strategies for unfamiliar multiplication and division tasks. •**Patterns and algebra** - using properties of numbers to continue patterns. •**Chance** - comparing dependent and independent events; describing probabilities of everyday events. •**Data representation and interpretation** - collecting and recording data; communicating information using graphical displays and evaluating the appropriateness of different displays.	•**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, make connections between representations of five-digit numbers, 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, extend fluency and recall of 3s, 6s, 9s facts, solve multiplication and division problems, revise informal recording methods and strategies used for calculations, apply mental and written strategies to computation. **Fractions and decimals** - revise and develop understanding of the proportion and relationships between fractions in the halves family and thirds family, counting and representing fractions on number lines, represent fractions using a range of models, solve fraction problems from familiar contexts. •**Shape** - explore properties of 2D shapes including polygons and quadrilaterals, identify combined shapes, investigate properties of shapes within tangrams, creating 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. •**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. •**Number and place value** - consolidate place value understanding of 5-digit numbers; compare and order 5-digit numbers; revise addition and subtraction concepts; solve addition and subtraction problems; consolidate multiplication problems; use appropriate strategies to solve problems. •**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.	**Money and financial mathematics** - represent, calculate and round amounts of money required for purchases and change. •**Number and place value** - model and 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. •**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. •**Location and transformation** - investigate different types of symmetry, analyse and create symmetrical designs.	•**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 •**fractions and decimals** - model and represent tenths and hundredths, make links between fractions and decimals, count by decimals, compare and sequence decimals •**number and place value** - apply mental and written computation strategies, recall multiplication and division facts and apply place value to partition and regroup numbers to assist calculations •**patterns and algebra** - use equivalent addition and subtraction number sentences to find unknown quantities.	•**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). •**Chance**: describe the likelihood of everyday chance events, order events on a continuum. •**Data representation and interpretation**: write questions to collect data, collect and record data, display and interpret data. •**Patterns and algebra**: investigate and describe number patterns, solve word problems and use equivalent multiplication and division number sentences to find unknown quantities. •**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.	•**Money and financial mathematics** - calculate change to the nearest five cents, solve problems involving purchases •**Shape** - measure area of shapes , compare the areas of regular and irregular shapes by informal means •**Using units of measurement (volume, time**) - measure and compare volume, use am and pm notation, solve simple time problems •**Fractions and decimals** - investigate equivalent fractions, make connections between fractions and decimal notation •**Number and place value** - use estimation and rounding, apply mental strategies, add, subtract, multiply and divide 2 and 3 digit numbers
	5	•**Number and place value** - make connections between factors and multiples, identify numbers that have 2, 3, 5 or 10 as factors, use rounding and estimating of whole numbers, represent multiplication using the split and compensate strategy, choose appropriate procedures to represent the split and compensate strategy of multiplication, use a written strategy for addition and subtraction. •**Fractions and decimals** - use models to represent fractions, count on and count back using unit fractions, identify and compare unit fractions using a range of representations and solve problems using unit fractions. •**Data representation and interpretation** - build an understanding of data, develop the skill of defining numerical and categorical data, generate sample questions, explain why data is either numerical or categorical, develop an understanding of why data is collected, choose appropriate methods to record data, interpret data, generalise by composing summary statements about data.	•**Chance** - identify and describe possible outcomes, describe equally likely outcomes, represent probabilities of outcomes using fractions, conduct a chance experiment and apply understandings of probability and data collection to investigate the fairness of a game. •**Number and place value** - round and estimate to check the reasonableness of answers, explore mental computation strategies for division, solve problems using mental computation strategies and informal recording methods, compare and evaluate strategies that are appropriate to different problems, make generalisations. •**Fractions and decimals** - add and subtract simple fractions with the same denominator. •**Using units of measurement** - investigate time concepts and the measurement of time, read and represent 24-hour time, measure dimensions, estimate and measure the perimeters of rectangles, investigate metric units of area measurement, estimate and calculate area of rectangles.	•**Number and place value** - round and estimate to check the reasonableness of answers, explore mental computation strategies for multiplication and division, solve problems using mental computation strategies and informal recording methods, compare and evaluate strategies that are appropriate to different problems and explore and identify factors and multiples •**Fractions and decimals** - make connections between fractional numbers and the place value system, and represent, compare and order decimals •**Location and transformation** - investigate and create reflection, translation and rotation symmetry, transform shapes through enlargement and describe the feature of transformed shapes •**Shape** - apply the properties of 3D objects to make connections with a variety of two-dimensional representations of 3D objects.	•**Geometric reasoning** - identify the components of angles, compare and estimate the size of angles to establish benchmarks, construct and measure angles •**Location and transformation and Shape** - describe and create transformations using symmetry, represent 3D objects with 2D representations •**Number and place value** - multiply and divide using a range of strategies, apply estimation and rounding to estimate answers and check answers, apply mental computation to multiply and divide; solve multiplication and division problems with no remainders •**Patterns and algebra** - create and continue patterns involving whole numbers, fractions and decimals, explore strategies to find unknown quantities •**Data representation and interpretation** - explore methods of data representations to construct and interpret data displays, reason involving data.	•**Money and financial mathematics** - investigate income and expenditure, calculate costs, investigate savings and spending plans, develop and explain simple financial plans. •**Location and transformation** - explore mapping conventions, interpret simple maps, use alphanumeric grids to locate landmarks and plot points, describe symmetry, create symmetrical designs and enlarge shapes. •**Number and place value** - round and estimate to check an answer is reasonable, use written strategies to add and subtract, use an array to multiply one and two-digit numbers, use divisibility rules to divide, solve problems involving computation and apply computation to money problems.	•**Using units of measurement** - chooses appropriate units for length, area, capacity and mass; measures length, area, capacity and mass; finds perimeter; problem solves and reasons when applying measurement to answer a question •**Fractions and decimals** - makes connections between fractions and decimals; compares and orders decimals •**Patterns and algebra** - creates, continues and identifies the rule for patterns involving the addition and subtraction of fractions; use number sentences to find unknown quantities involving multiplication and division •**Number and place value** - adds and subtracts using mental and written strategies including the right-to-left strategy; multiplies whole numbers and divides by a one-digit whole number with and without remainders	•**Chance** - order chance events, express probability on a numerical continuum, apply probability to games of chance, make predictions in chance experiments •**Data representation and interpretation** - investigate an issue (design data-collection questions and tools, collect data, represent as a column graph or dot plot, interpret and describe data to draw a conclusion) •**Using units of measurement** - read and represent 24-hour time, convert between 12- and 24-hour time •**Number and place value** - apply mental and written strategies to solve addition, subtraction, multiplication and division problems, identify and use factors and multiples.	•**Money and financial decisions** - create simple budgets, calculate with money, identify the GST component of invoices and receipts, make financial decisions •**Geometric reasoning** - estimate and measure angles, construct angles using a protractor •**Location and transformation** - explore maps and grids, use a grid to describe locations, describe positions using landmarks and directional language •**Fractions and decimals** - apply decimal skills, recognise that the place value system can be extended beyond hundredths, compare order and represent decimals, locate decimals on a number line, extend the number system to thousandths and beyond •**Number and algebra** - apply computation skills, use estimation and rounding to check reasonableness, solve problems involving addition subtraction multiplication and division, use efficient mental and written strategies to solve problems.

	6	•**Number and place value** - Identify and describe properties of prime and composite numbers, select and apply mental and written strategies to problems involving whole numbers. •**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. •**Data representation and interpretation** - Revise different types of data displays, interpret data displays, investigate the similarities and differences between different data displays and identify the purpose and use of different displays and identify the difference between categorical and numerical data. •**Chance** - Represent the probability of outcomes as a fraction or decimal and conduct chance experiments.	•**using units of measurement -** solve problems involving the comparison of lengths and areas, and interpret and use timetables •**number and place value** - apply efficient mental and written strategies to solve problems involving all four operations •**fractions and decimals** - solve problems involving addition and subtraction of fractions with the same or related denominators, find a simple fraction of a quantity, and make connections between equivalent fractions, decimals and percentages •**money and financial mathematics** - investigate and calculate percentage discounts of 10%, 25% and 50% on sale items.	•**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. •**Shape** - problem solve and reason to create nets and construct models of simple prisms and pyramids. •**Using units of measurement** - make connections between volume and capacity. •**Number and place value** - identify, describe and continue square and triangular number patterns, make generalisations about the relationship between square and triangular numbers, explore numbers below zero and position integers 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 •**Number and place value** - select and apply mental and written strategies and digital technologies to solve problems involving multiplication and division with whole numbers. •**Fractions and decimals** - locate, order and compare fractions with related denominators and locate them on a number line •**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.	•**Money and financial mathematics** - connect fractions and percentages, calculate percentages, calculate discounts of 10%, 25% and 50% on sale items •**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, compare and order positive and negative integers •**Location and transformation** - identify the four quadrants on a Cartesian plane, plot and read points in all four quadrants, revise symmetry, reflection, rotation and translation, describe the effect of combinations of translations, reflections and rotations.	•**Fractions and decimals** - add and subtract fractions with related denominators, calculate a fraction of a quantity, multiply and divide decimals by powers of 10, add and subtract decimals, multiply decimals by whole numbers, divide numbers that result in decimal remainders, make connections between fractions, decimals and percentages, and solve problems involving fractions and decimals •**Using units of measurement** - connect decimals to the metric system, convert between units of measure, solve problems involving length and area and connect volume and capacity •**Patterns and algebra** - continue and create sequences involving whole numbers, fractions and decimals, describe the rule used to create the sequence and apply the order of operations to aid calculations.	•**Chance** - conduct chance experiments, record data in a frequency table, calculate relative frequency, write probability as a fraction, decimal or percent, explore the effect of large trials on results, 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, problem solve and reason by manipulating secondary data •**Patterns and algebra & Number and place value** - represent number patterns in a table and graphically, 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, solve problems using the order of operations, solve multiplication and division problems using a written algorithm.	•**Data representation and interpretation** - problem solve and reason involving data, measurement and time •**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 •**Geometric reasoning -** measure angles, apply generalisations about angles on a straight line, angles at a point and vertically opposite angles and apply in real-life contexts •**Location and transformation** - apply translations, reflections and rotations to create symmetrical shapes.