



STAGE 2

By the end of Stage 2, students ask questions and use efficient mental and written strategies with increasing fluency to solve problems. They use technology to investigate mathematical concepts and check their solutions. Students use appropriate terminology to describe and link mathematical ideas, check statements for accuracy and explain their reasoning.

Students count, order, read and record numbers of up to five digits. They use informal and formal mental and written strategies to solve addition and subtraction problems. Students use mental strategies to recall multiplication facts up to 10×10 and related division facts. They use informal written strategies for multiplication and division of two-digit numbers by one-digit numbers. Students represent, model and compare commonly used fractions, and model, compare and represent decimals of up to two decimal places. Students perform simple calculations with money and solve simple purchasing problems. They record, describe and complete number patterns and determine missing numbers in number sentences. Students recognise the properties of odd and even numbers.

Students estimate, measure, compare, convert and record length, area, volume, capacity and mass using formal units. They read and record time in hours and minutes, convert between units of time, and solve simple problems involving the duration of time. Students name, describe and sketch particular three-dimensional objects and two-dimensional shapes. They combine and split two-dimensional shapes to create other shapes. They compare angles using informal means and classify angles according to their size. Students use a grid-reference system to describe position, and compass points to give and follow directions. They make simple calculations using scales on maps and plans.

Students collect and organise data, and create and interpret tables and picture and column graphs. They list all possible outcomes of everyday events, and describe and compare chance events in social and experimental contexts.

From NSW mathematics syllabus

Overview

This scope and sequence has been developed to promote the **connectedness of mathematics as a whole subject**. Unit duration is up to the professional judgement of each teacher.

The focus of each unit is the Number and Algebra concept with the Measurement and Geometry and Statistics and probability integrated/connected into the Number and Algebra focus.

Connections highlighted in yellow are suggestions. Connections can also be made by simply following the sequence of the unit, starting with the Number and Algebra concept/s.

Working mathematically should be imbedded into all maths lesson/activities. Consider opened ended/inquiry based learning tasks when programming.

Mathematics should account for **40%** of your weekly teaching time

Assessment

Ongoing assessment will be necessary to **plot students on the Numeracy continuum** using a data wall in your classroom (Summative). Students will need to self-assess to track their progress.

End of semester formative assessment tasks to be created in a NAPLAN style format to assist with CTJ.



Unit Registration	Outcomes	Number & Algebra key ideas	Measurement & Geometry Statistics & Probability Number & Algebra Other KLA <i>Concept/s that connect to number/algebra concept</i>	Assessment strategy used
1	Whole number MA2-4NA A student applies place value to order, read and represent numbers of up to five digits Patterns and Algebra MA2-8NA A student generalises properties of odd and even numbers, generates number patterns, and completes simple number sentences by calculating missing values	<ul style="list-style-type: none"> * Count forwards and backwards by tens and hundreds from any starting point * State the place value of digits in numbers up to four digits * Read, write and order numbers up to four digits 	<ul style="list-style-type: none"> * Identify, continue, create, describe and record increasing and decreasing number patterns * Identify odd and even numbers up to 4 digits 	
2	Addition and Subtraction MA2-5NA A student uses mental and written strategies for addition and subtraction involving two-, three-, four- and five –digit numbers Length MA2-9MG A student measures, records, compares and estimates lengths, distances and perimeters in metres, centimetres and millimetres and measures, compares and records temperatures	<ul style="list-style-type: none"> * Model and apply the associative property for addition * Use and record a range of mental strategies for addition and subtraction of two-, three and four digit numbers * Use equal sign to record equivalent number sentences 	<ul style="list-style-type: none"> * Use metres, centimetres and millimetres to measure, compare, order and estimate lengths * Use equal sign to record equivalent number sentences eg: $2 + 2 = 5 - 1$ 	
3	Multiplication and Division MA2-6NA A student selects and uses mental and informal written strategies for multiplication and division Area MA2-10MG A student measures, records, compares and estimates areas using square centimetres and square metres	<ul style="list-style-type: none"> * Recall multiplication facts for twos, threes, fives and tens * Recognise and use the symbols \times and \div * Link multiplication and division using arrays 	<ul style="list-style-type: none"> * Recognise the need for formal units to measure area * Use square centimetres and square metres to measure and estimate rectangular (and square) areas (Link with arrays) 	
4	Data MA2-18SP A student selects appropriate methods to collect data, and constructs, compares, interprets and evaluates data displays, including tables, picture graphs and column graphs	<ul style="list-style-type: none"> * Plan methods for data collection * Collect data, organize into categories and create displays using lists, tables, picture graphs and simple column graphs (one to one correspondence) 	<ul style="list-style-type: none"> * Link with Science Unit in Term 1 and Term 2. Primary connections have strong links with data as part of the investigation process. 	



Unit Registratio	Outcomes	Number & Algebra key ideas	Measurement & Geometry Statistics & Probability Number & Algebra Other KLA <i>Concept/s that connect to number/algebra concept</i>	Assessment strategy used
1	Whole number MA2-4NA A student applies place value to order, read and represent numbers of up to five digits Patterns and Algebra MA2-8NA A student generalises properties of odd and even numbers, generates number patterns, and completes simple number sentences by calculating missing values	<ul style="list-style-type: none"> * State the place value of digits in numbers of up to five digits * Read, write and order numbers up to 5 digits 	<ul style="list-style-type: none"> * Recognise, continue and describe number patterns resulting from performing multiplication (Repeated addition patterns, students I.D multiplication eg 2, 4, 6 is 2 + 2 + 2 which is 3 x 2) * Investigate properties of odd and even numbers * Record numbers up to 5 digits using expanded notation 	
2	Addition and Subtraction MA2-5NA A student uses mental and written strategies for addition and subtraction involving two-, three-, four- and five –digit numbers Length MA2-9MG A student measures, records, compares and estimates lengths, distances and perimeters in metres, centimetres and millimetres and measures, compares and records temperatures Patterns and Algebra MA2-8NA A student generalises properties of odd and even numbers, generates number patterns, and completes simple number sentences by calculating missing values	<ul style="list-style-type: none"> * Use the inverse operation to check addition and subtraction calculations * Use and record a range of mental strategies for addition and subtraction of two-, three-, four- and five digit numbers 	<ul style="list-style-type: none"> * Estimate and measure perimeters of two dimensional shapes * Select and use appropriate scaled instruments and units to measure and compare lengths eg: Find difference between lengths * Find missing numbers in number sentences involving addition or subtraction on one or both sides of the equals sign eg: 4 + ___ = 11 or 11 + 4 = 7 + ___ 	
3	Multiplication and Division MA2-6NA A student selects and uses mental and informal written strategies for multiplication and division Area MA2-10MG A student measures, records, compares and estimates areas using square centimetres and square metres	<ul style="list-style-type: none"> * Recall and use multiplication facts up to 10x10 with automaticity * Relate multiplication facts to their inverse division facts * Determine multiples and factors of whole numbers 	<ul style="list-style-type: none"> * Revise Year 3 Key idea of area of squares. * Measure and compare the areas of regular and irregular shapes using a square-centimetre grid * Compare areas measured in square centimetres and square metres 	
4	Data MA2-18SP A student selects appropriate methods to collect data, and constructs, compares, interprets and evaluates data displays, including tables, picture graphs and column graphs	<ul style="list-style-type: none"> * Select, trial and refine methods for data collection, including survey questions and recording sheets * Construct data displays, including tables, and column and picture graphs of many-to-one correspondence 	<ul style="list-style-type: none"> * Link with Science Unit in Term 1 and Term 2. Primary connections have strong links with data as part of the investigation process. 	



Unit Registration	Outcomes	Number & Algebra key ideas	Measurement & Geometry Statistics & Probability Number & Algebra Other KLA <i>Concept/s that connect to number/algebra concept</i>	Assessment strategy used
1	Whole number MA2-4NA A student applies place value to order, read and represent numbers of up to five digits Addition and Subtraction MA2-5NA A student uses mental and written strategies for addition and subtraction involving two-, three-, four- and five –digit numbers	* State the place value of digits in numbers of up to four digits * Read, write and order numbers of up to four digits	* Model and apply the associative property for addition * Use and record a range of mental strategies for addition and subtraction of two-, three and four digit numbers	
2	Fractions and Decimals MA2-7NA A student represents, models and compares commonly used fractions and decimals Time MA2-13MG A student reads and records time in one-minute intervals and converts between hours, minutes and seconds 2D shape MA2-15MG A student manipulates, identifies and sketches two-dimensional shapes, including special quadrilaterals and describes their features Angles MA2-16MG A student identifies, describes, compares and classifies angles	* Model and represent fractions with denominators 2, 3, 4, 5 and 8 * Count by halves, quarters and thirds, including with mixed numerals	* Identify and draw lines of symmetry on shapes Describe as $\frac{1}{2}$, $\frac{1}{4}$ etc * Recognise the coordinated movements of the hands on a clock * Read and record time to the minute using digital notation and the terms 'past' and 'to' * Identify 'perpendicular' lines and 'right angles' * Identify and describe angles as measures of turn Angles on a clock face/fraction of the clock * Link with art where symmetry is used as a style.	
3	Multiplication and Division MA2-6NA A student selects and uses mental and informal written strategies for multiplication and division	* Use mental strategies to multiply one-digit numbers by multiples of 10 * Model and apply to commutative property for multiplication * Use and record a range of mental strategies for multiplication of two single-digit numbers	* Find missing numbers in number sentences involving one operation of multiplication or division (<i>Year 4 key idea – Multiplication and Division 2</i>)	
4	3D Space MA2-14MG A student makes, compares, sketches and names three-dimensional objects, including prisms, pyramids, cylinders, cones and spheres, and describes their features Multiplication and Division MA2-6NA A student selects and uses mental and informal written strategies for multiplication and division Volume and Capacity MA2-11MG A student measures, records, compares and estimates volumes and capacities using litres, millilitres and cubic centimetres	* Use mental strategies to multiply one-digit numbers by multiples of 10 * Use and record a range of mental strategies for multiplication of two single-digit numbers *** Main connection is between 3D space and Volume/Capacity using multiplication strategies	* Recognise the need for formal units to measure capacity and volume * Use litres to measure, compare and estimate capacities and volumes * Use cubic centimetres to measure and compare volumes * Identify, describe and compare features of prisms, pyramids, cylinders, cones and spheres * Make models of 3D objects	



Unit Registration	Outcomes	Number & Algebra key ideas	Measurement & Geometry Statistics & Probability Number & Algebra Other KLA <i>Concept/s that connect to number/algebra concept</i>	Assessment strategy used
1	Whole number MA2-4NA A student applies place value to order, read and represent numbers of up to five digits Addition and Subtraction MA2-5NA A student uses mental and written strategies for addition and subtraction involving two-, three-, four- and five –digit numbers	<ul style="list-style-type: none"> * State the place value of digits in numbers of up to five digits * Read, write and order numbers of up to five digits * Record numbers of up to five digits using expanded notation 	<ul style="list-style-type: none"> * Use and record a range of mental strategies for addition and subtraction of two-, three-, four- and five digit numbers * Use the formal written algorithm for addition and subtraction (Link with place value and expanded notation) 	
2	Fractions and Decimals MA2-7NA A student represents, models and compares commonly used fractions and decimals Time MA2-13MG A student reads and records time in one-minute intervals and converts between hours, minutes and seconds 2D shape MA2-15MG A student manipulates, identifies and sketches two-dimensional shapes, including special quadrilaterals and describes their features Angles MA2-16MG A student identifies, describes, compares and classifies angles	<ul style="list-style-type: none"> * Model and find equivalence between fractions with denominators 2, 4 and 8, 3 and 6. * Use transformations to create and describe symmetrical designs * Create and record tessellating design Teach this through CAPA	<ul style="list-style-type: none"> * Revise Year 3 key ideas and then... * Convert between seconds, minutes, hours and days * Combine common shapes to form other shapes and record the arrangement * Split common shapes into other shapes and record the results Use pattern blocks * Revise Year 3 key ideas and then ... * Draw and classify angles as acute, obtuse, straight, reflex or a revolution Compare 4 quadrants each = 90 degrees Fractions of angles and relate to analog time 	
3	Multiplication and Division MA2-6NA A student selects and uses mental and informal written strategies for multiplication and division	<ul style="list-style-type: none"> * Use and record a range of mental and informal written strategies for multiplication and division of two-digit numbers by a one-digit operator * Use mental strategies and informal recording methods for division with remainders * Use the equals sign to record equivalent number relationships involving multiplication 	<ul style="list-style-type: none"> * Find missing numbers in number sentences involving one operation of multiplication or division 	
4	3D Space MA2-14MG A student makes, compares, sketches and names three-dimensional objects, including prisms, pyramids, cylinders, cones and spheres, and describes their features Multiplication and Division MA2-6NA A student selects and uses mental and informal written strategies for multiplication and division Volume and Capacity MA2-11MG A student measures, records, compares and estimates volumes and capacities using litres, millilitres and cubic centimetres	<ul style="list-style-type: none"> * Use and record a range of mental and informal written strategies for multiplication and division of two-digit numbers by a one-digit operator *** Main connection is between 3D space and Volume/Capacity using multiplication strategies	<ul style="list-style-type: none"> * Use litres and millilitres to measure, compare and estimate capacities and volumes * Record capacities and volumes using the abbreviations L and ml * Convert between litres and millilitres * Compare volumes of objects by submerging each in water * Represent three-dimensional objects in drawings showing depth * Sketch three dimensional objects from different views * Interpret and make drawings on isometric paper 	



Unit Registration	Outcomes	Number & Algebra key ideas	Measurement & Geometry Statistics & Probability Number & Algebra Other KLA <i>Concept/s that connect to number/algebra concept</i>	Assessment strategy used
1	Whole number MA2-4NA A student applies place value to order, read and represent numbers of up to five digits Addition and Subtraction MA2-5NA A student uses mental and written strategies for addition and subtraction involving two-, three-, four- and five –digit numbers	Revise from term 1 & 2 * State the place value of digits in numbers of up to four digits (including decimals) * Read, write and order numbers of up to four digits (including decimals)	* Perform calculations with money, including calculating equivalent amounts using different denominations	
2	Fractions and decimals MA2-7NA A student represents, models and compares commonly used fractions and decimals Multiplication and Division MA2-6NA A student selects and uses mental and informal written strategies for multiplication and division	* Represent fractions on number lines, including number lines that extend beyond 1 * Count by $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$'s and mixed numbers Connect dividing strategies for \div by 2, 4 and 8 ($\frac{1}{2}$, $\frac{1}{2}$ and $\frac{1}{2}$ again) and 3, 6 and 12 (\div 3, then $\frac{1}{2}$ that, then $\frac{1}{2}$ that again) Represent these fractions on open number-line, use number line to represent numbers broken into fractions/divided amounts	* Recognise and use the symbols \times and \div * Link multiplication and division using arrays * Use and record a range of mental strategies for multiplication and division of two single-digit numbers	
3	Mass MA2-12MG A student measures, records, compares and estimates the masses of objects using kilograms and grams Fractions and decimals MA2-7NA A student represents, models and compares commonly used fractions and decimals	Model and represent fractions with denominators 2, 3, 4, 5 & 8 Connections is into mass comparing and ordering masses ($\frac{1}{2}$ of, $\frac{1}{4}$ of etc)	* Recognise the need for formal units to measure mass * Use kilograms to measure, compare , order and estimate masses * Record masses using the abbreviation kg	
4	Addition and Subtraction MA2-5NA A student uses mental and written strategies for addition and subtraction involving two-, three-, four- and five –digit numbers 2D space MA2-15MG A student manipulates, identifies and sketches two-dimensional shapes, including special quadrilaterals and describes their features Length MA2-9MG A student measures, records, compares and estimates lengths, distances and perimeters in metres, centimetres and millimetres and measures, compares and records temperatures	* Use and record a range of mental strategies for addition and subtraction of two-, three and four digit numbers	* Identify and name the special quadrilaterals * Identify and describe shapes as 'regular' or 'irregular' * Describe and compare features of shapes, including the special quadrilaterals * records lengths using the abbreviations mm, cm and m * Estimate and measure the perimeters of two dimensional shapes (Year 4 Key concept)	



Unit Registration	Outcomes	Number & Algebra key ideas	Measurement & Geometry Statistics & Probability Number & Algebra Other KLA <i>Concept/s that connect to number/algebra concept</i>	Assessment strategy used
1	Whole number MA2-4NA A student applies place value to order, read and represent numbers of up to five digits Addition and Subtraction (Money) MA2-5NA A student uses mental and written strategies for addition and subtraction involving two-, three-, four- and five –digit numbers Fractions and decimals MA2-7NA A student represents, models and compares commonly used fractions and decimals	Revise from term 1 & 2 * State the place value of digits in numbers of up to five digits (including decimals) * Read, write and order numbers of up to five digits (including decimals)	* Use the formal written algorithm for addition and subtraction * Solve word problems, including those involving money * Apply the place value system to represent tenths and hundredths as decimals (link this with money and decimals – base 10 number system)	
2	Fractions and decimals MA2-7NA A student represents, models and compares commonly used fractions and decimals Multiplication and Division MA2-6NA A student selects and uses mental and informal written strategies for multiplication and division	* Model and find equivalence between fractions with denominators of 5, 10 and 100 * Make connections between fraction and decimal notation * Apply the place value system to represent tenths and hundredths as decimals * Represent decimals on number lines (connect with Year 3 key concept of fractions on number lines)	* Use mental strategies and informal recording methods for division with remainders (remainder as a fraction) * Determine factors and multiples of whole numbers	
3	Mass MA2-12MG A student measures, records, compares and estimates the masses of objects using kilograms and grams Fractions and decimals MA2-7NA A student represents, models and compares commonly used fractions and decimals	* Model and find equivalence between fractions with denominators 2, 4 and 8, 3 and 6, 5, 10 and 100 Connections is into mass comparing and ordering masses (1/2 of, 1/4 of etc) after weighing using scaled instrument	Revise Year 3 key ideas and then... * Use kilograms and grams to measure and compare masses using a scaled instrument * Record masses using the abbreviations kg and g	
4	Addition and Subtraction MA2-5NA A student uses mental and written strategies for addition and subtraction involving two-, three-, four- and five –digit numbers 2D space MA2-15MG A student manipulates, identifies and sketches two-dimensional shapes, including special quadrilaterals and describes their features Length MA2-9MG A student measures, records, compares and estimates lengths, distances and perimeters in metres, centimetres and millimetres and measures, compares and records temperatures	* Use and record a range of mental strategies for addition and subtraction of two-, three-, four- and five digit numbers	Revise year 3 concepts of.... * Identify and name the special quadrilaterals * Describe and compare features of shapes, including the special quadrilaterals * Convert between metres, centimetres and millimetres * Record lengths and distances using decimal notation to two decimal places * Estimate and measure perimeters of two dimensional shapes	



Unit Registration	Outcomes	Number & Algebra key ideas	Measurement & Geometry Statistics & Probability Number & Algebra Other KLA <i>Concept/s that connect to number/algebra concept</i>	Assessment strategy used
1	Whole number MA2-4NA A student applies place value to order, read and represent numbers of up to five digits Patterns and algebra MA2-8NA A student generalises properties of odd and even numbers, generates number patterns, and completes simple number sentences by calculating missing values	* State the place value of digits in numbers of up to four digits * Read, write and order numbers of up to four digits	* Identify odd and even numbers up to four digits	
2	Revise the four operations where required MA2-6NA A student selects and uses mental and informal written strategies for multiplication and division MA2-5NA A student uses mental and written strategies for addition and subtraction involving two-, three-, four- and five –digit numbers	Connect/explicitly teach where necessary		
3	Chance MA2-19SP A student describes and compares chance events in social and experimental contexts		* Identify and describe possible ‘outcomes’ of chance experiments * Predict and record all possible combinations in a chance situation * Conduct chance experiments and compare predicted with actual results	
4	Position MA2-17MG A student uses simple maps and grids to represent position and follow routes, including using compass directions		* Use grid-referenced maps to locate and describe positions and pathways * Draw simple maps, with and without a grid	
5	Temperature MA2-9MG A student measures, records, compares and estimates lengths, distances and perimeters in metres, centimetres and millimetres and measures, compares and records temperatures		* Identify temperature as a measure of how hot or cold something is * Use everyday language to describe temperature, eg ‘cold’, ‘warm’, ‘hot’	



Unit Registration	Outcomes	Number & Algebra key ideas	Measurement & Geometry Statistics & Probability Number & Algebra Other KLA <i>Concept/s that connect to number/algebra concept</i>	Assessment strategy used
1	Whole number MA2-4NA A student applies place value to order, read and represent numbers of up to five digits Patterns and algebra MA2-8NA A student generalises properties of odd and even numbers, generates number patterns, and completes simple number sentences by calculating missing values	* State the place value of digits in numbers of up to five digits * Read, write and order numbers of up to five digits	* Recognise, continue and describe number patterns resulting from performing multiplication Connect with * Investigate and use the properties of odd and even numbers *** Investigate what happens when odd x odd, even x even and even x odd numbers	
2	Revise the four operations where required MA2-6NA A student selects and uses mental and informal written strategies for multiplication and division MA2-5NA A student uses mental and written strategies for addition and subtraction involving two-, three-, four- and five –digit numbers	Connect/explicitly teach where necessary		
3	Length/Time/Volume and Capacity Outcomes: MA2-12MG, MA2-9MG, MA2-11MG Fractions and Decimals MA2-7NA A student represents, models and compares commonly used fractions and decimals	* Apply the place value system to represent tenths and hundredths as decimals	* Convert between litres and millilitres * Convert between seconds, minutes, hours and days * Convert between metres, centimetres and millimetres *** Touch on each of these “Measurement” types. Use practical examples to demonstrate conversion between units	
4	Chance MA2-19SP A student describes and compares chance events in social and experimental contexts		* Describe possible everyday events and order their chances of occurring * Identify everyday events where one occurring cannot happen if the other happens * Identify events where the chance of one occurring will not be affected by the occurrence of the other	
5	Position MA2-17MG A student uses simple maps and grids to represent position and follow routes, including using compass directions		* Determine directions N, E, S, W; and NE, SE, SW and NW, given one of the directions * Interpret legends and directions on maps * Use the scale to calculate the distance between two points on maps	
6	Temperature MA2-9MG A student measures, records, compares and estimates lengths, distances and perimeters in m, cm and mm and measures, compares and records temperatures		* Use a scaled instrument to measure and compare temperatures * Record temperatures using the symbol for degrees (°)	