

# Mathletics NSW Curriculum

## Understanding Practice and Fluency (UPF)



Stage 2 and 3  
November, 2021

Mathletics

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NSW Curriculum

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# Stage 2

## 1 Number and Algebra

Outcome	Quests	Content
MA2-4NA applies place value to order, read and represent numbers of up to five digits	Numbers up to 5 digits (3)	Identifying and counting numbers up to 4 digits
		Reading and representing numbers: up to 4 digits
		Comparing and ordering numbers to 10 000
		Using place value to partition: up to 4 digits
		Rounding numbers: 4 digits
	Numbers up to 5 digits (4)	Comparing and ordering numbers up to 5 digits
		Reading and representing numbers: up to 5 digits
		Using place value to partition: up to 5 digits
		Rounding numbers: 5 digits
MA2-5NA uses mental and written strategies for addition and subtraction involving two-, three-, four- and five-digit numbers	Add/sub up to 5 digits (3)	Add/subtract: single digit numbers
		Add/subtract: 2 & 3-digit using jump strategy
		Add/subtract: place value partitioning 2 & 3 digit
		Add/subtract: bridging up to 10 using 2 & 3 digit
		Add/subtract: bridging
		Add/subtract: partitioning 3-digits
		Adding and subtracting 3-digit numbers
		Add/subtract: using place value (split model)
		Add/subtract: rounding & compensation 2-digit
		Add/subtract: to and from 100
		Add/subtract: 1-digit numbers, 100, 1000 & 10 000
		Add/subtract: Non-standard/place value partitioning
		Add/subtract: choosing efficient strategies
		Add/subtract: estimating
		Relationship between addition and subtraction
Representing money values		

	Add/sub up to 5 digits (4)	Representing problems using a bar model
		Add/subtract: efficient strategies & word problems
		Addition: algorithm (without regrouping)
		Addition: algorithm (with regrouping)
		Addition: algorithm (with/without regrouping)
		Subtraction: algorithm (without decomposing)
		Subtraction: algorithm (with decomposing)
		Add/subtract: word problems
		Add/subtract: money
MA2-6NA uses mental and informal written strategies for multiplication and division	Mult/div mental strategies (3)	Skip counting by 10 to 1000
		Skip counting by 2 to 1000
		Skip counting by 5 to 1000
		Skip counting by 3 to 1000
		Skip counting by 4
		Multiplication/division facts for 2
		Multiplication/division facts for 10
		Multiplication/division facts for 5
		Multiplication/division facts for 2, 5, 10
		Multiplication/division facts for 3
		Multiplication word problems
		Word problems and missing numbers
	Mult/div mental strategies (4)	Multiplication/division facts for 4
		Multiplication/division facts up to 5
		Multiplication/division facts and properties
		Exploring multiplication/division for 6 up to 60
		Exploring multiplication/division for 7 up to 70
		Exploring multiplication/division for 8 up to 80
		Exploring multiplication/division for 9 up to 90
		Using facts to multiply using 2-digits

		Using facts to divide 3-digit numbers by 10		
		Multiplication strategies using 1 digit		
		Using the conventions of multiplication		
		Multiples and factors up to 100		
		Inverse facts		
		Practising multiplication strategies		
		Multiplying 2-digit numbers by a 1-digit number		
		Multiplying 2-digits using repeated addition		
		Multiplying 2-digits using factorising		
		Selecting effective multiplication strategies		
		Develop strategies for division with no remainder		
		Dividing a 2-digit number by a 1-digit number		
		Remainders in division problems		
MA2-7NA represents, models and compares commonly used fractions and decimals	Common fractions & decimals (3)	Using fractions: halves and quarters		
		Numerator and denominator		
		Using fractions: halves, thirds and quarters		
		Using fractions: thirds and sixths		
		Using fractions: fifths		
		Counting in thirds		
		Using mixed numbers on a number line		
	Common fractions & decimals (4)	Investigating fractions		
		Using decimal tenths		
		Using decimal hundredths		
		Partitioning decimal hundredths		
		Connecting decimal fractions and common fractions		
		MA2-8NA generalises properties of odd and even numbers, generates number patterns, and completes simple number sentences by calculating missing values	Patterns & missing values (3)	Describing, continuing & creating number patterns
				Exploring odd and even numbers
Patterns & missing values (4)	Using number sentences to find unknown quantities			
	Odd and even numbers			
	Investigating multiple sequences			
	Exploring number patterns			

		Expressing equations as word problems
		Solving word problems involving mult and div

## 2 Measurement and Geometry

Outcome	Quests	Content
MA2-9MG measures, records, compares and estimates lengths, distances and perimeters in metres, centimetres and millimetres, and measures, compares and records temperatures	Measuring length and temperature (3)	Comparing, ordering and measuring length
	Measuring length and temperature (4)	Using metric units to measure length
		Length and 3D objects
		Introducing perimeter
MA2-10MG measures, records, compares and estimates areas using square centimetres and square metres	Area: square cm and m (3)	Using formal units for area
	Area: square cm and m (4)	Solving word problems involving mult and div
MA2-11MG measures, records, compares and estimates volumes and capacities using litres, millilitres and cubic centimetres	Volume/capacity: L, mL, cubic cm (3)	Measure, order and compare units of volume
	Volume/capacity: L, mL, cubic cm (4)	Measuring volume
MA2-12MG measures, records, compares and estimates the masses of objects using kilograms and grams	Mass: kg and g (3)	Measuring capacity in millilitres
	Mass: kg and g (4)	Using the kilogram to measure mass
MA2-13MG reads and records time in one-minute intervals and converts between hours, minutes and seconds	Time: minutes, hours, seconds (3)	Measuring in grams and kilograms
	Time: minutes, hours, seconds (4)	Telling the time to the minute
		Converting time and solving time problems
		Using AM and PM
MA2-14MG makes, compares, sketches and names three-dimensional objects, including prisms, pyramids, cylinders, cones and spheres, and describes their features	Features of 3D objects (3)	Read and interpret timetables
	Features of 3D objects (4)	Writing dates
		Exploring prisms and nets
		Rectangular prism nets
		Identifying prisms
	MA2-15MG manipulates, identifies and sketches two-dimensional shapes, including special quadrilaterals, and describes their features	Features of 2D shapes (3)
Prisms and pyramids		
Identifying cylinders		
Features of 2D shapes (4)		Identifying spheres
	Comparing and identifying two-dimensional shapes	
	Comparing features of two-dimensional shapes	
	Recognising lines of symmetry	
MA2-16MG identifies, describes, compares and classifies angles	Angle introduction (3)	Composing and decomposing 2D shapes
		Introducing transformations
		Creating and drawing symmetrical designs
		Recognising tessellations
MA2-16MG identifies, describes, compares and classifies angles	Angle introduction (3)	Identifying and comparing angles



		Introducing angles
	Angle introduction (4)	Classifying angles
MA2-17MG uses simple maps and grids to represent position and follow routes, including using compass directions	Simple maps & grids (3)	Interpreting and creating referenced maps
	Simple maps & grids (4)	Using legends and reading maps
		Solving measurement problems

### 3 Statistics and Probability

Outcome	Quests	Content
MA2-18SP selects appropriate methods to collect data, and constructs, compares, interprets and evaluates data displays, including tables, picture graphs and column graphs	Display & interpret data (3)	Introducing the statistical investigation process
		Category data
		Statistical investigations
		Representing and interpreting information
	Display & interpret data (4)	Comparing data displays
		Select and trial methods for data collection
		Column graphs using many-to-one correspondence
		Picture graphs with many-to-one correspondence
MA2-19SP describes and compares chance events in social and experimental contexts	Explore chance events (3)	Evaluating and comparing data displays
		Conducting chance experiments
	Explore chance events (4)	Describing the chance of events occurring
		Exploring everyday events occurring
		Identifying the chance of events occurring

# Stage 3

## 1 Number and Algebra

Outcome	Quests	Content
MA3-4NA orders, reads and represents integers of any size and describes properties of whole numbers	Number properties & integers (5)	Recognise, represent and order numbers Multiples and factors
	Number properties & integers (6)	Square and triangular numbers
		Investigating integers
		Prime and composite numbers
MA3-5NA selects and applies appropriate strategies for addition and subtraction with counting numbers of any size	Add/sub numbers of any size (5)	Adding numbers of any size
		Subtracting numbers of any size
		Adding and subtracting numbers of any size
		Checking with estimation and rounding
	Add/sub numbers of any size (6)	Addition and subtraction word problems
MA3-7NA compares, orders and calculates with fractions, decimals and percentages	Mult/div & order of operations (5)	Multiplication using multiples of 10
		Mult: rounding, compensating and partitioning
		Mult: doubling, halving and thirding
		Multiplying using the split method
		Multiplying by factorising
		Multiplying using an area model
		Multiplying using formal algorithms
		Multiplication word problems
		Division using partitioning
		Extended division - no remainders or zeros
		Extended division - remainders
		Extended division - with and without remainders
		Contracted division - no remainders or zeros
		Contracted division - remainders
		Contracted division - with and without remainders
Division word problems		
Rounding to estimate products and quotients		

	Mult/div & order of operations (6)	Multiplying and dividing by multiples of 10		
		Selecting efficient mult/div strategies		
		Selecting effective strategies for division		
		Multiplication and division word problems		
		Order of operations - no brackets		
		Order of operations using brackets		
MA3-7NA compares, orders and calculates with fractions, decimals and percentages	Fractions, decimals, percentages (5)	Compare and order common unit fractions		
		Adding and subtracting proper fractions		
		Add & subtract fractions - common denominators		
		Place value using thousandths		
		Compare and order decimals		
	Fractions, decimals, percentages (6)	Working with fractions		
		Add & subtract proper fractions - related denoms		
		Add & subtract mixed numerals - related denoms		
		Finding a fraction of a quantity		
		Adding decimals		
		Subtracting decimals		
		Multiplying decimals		
		Dividing decimals		
		Multiplying and dividing decimals by powers of 10		
		Representing fractions, decimals and percentages		
		Fraction, decimal and percentage equivalence		
		Calculating percentages		
		MA3-8NA analyses and creates geometric and number patterns, constructs and completes number sentences, and locates points on the Cartesian plane	Number patterns (5)	Number patterns - addition and subtraction
				Number sentences - multiplication and division
Number patterns (6)	Continuing and creating number sequences			
	The Cartesian plane			

## 2 Measurement and Geometry

Outcome	Quests	Content
MA3-9MG selects and uses the appropriate unit and device to measure lengths and distances, calculates perimeters, and converts between units of length	Length, distance, perimeter (5)	Comparing and ordering metric lengths Calculating perimeter of rectangles
	Length, distance, perimeter (6)	Decimal notation and the metric system
		Converting standard metric units of length
		Length problems
MA3-10MG selects and uses the appropriate unit to calculate areas, including areas of squares, rectangles and triangles	Calculating area (5)	Selecting appropriate units for measuring Calculating the area of rectangles
	Calculating area (6)	Calculating the area of triangles
	MA3-11MG selects and uses the appropriate unit to estimate, measure and calculate volumes and capacities, and converts between units of capacity	Calculating volume & capacity (5)
Calculating volume & capacity (6)		Volume and capacity
		Decimal representation in capacity
		Converting common units of capacity
MA3-12MG selects and uses the appropriate unit and device to measure the masses of objects, and converts between units of mass	Measure & convert mass (5)	Working with mass
	Measure & convert mass (6)	Decimal representation in mass
		Converting units of mass
MA3-13MG uses 24-hour time and am and pm notation in real-life situations, and constructs timelines	24-hour time & timelines (5)	Using 24-hour time
		Understanding elapsed time
	24-hour time & timelines (6)	Using timetables
		Timelines
MA3-14MG identifies three-dimensional objects, including prisms and pyramids, on the basis of their properties, and visualises, sketches and constructs them given drawings of different views	Properties of 3D objects (5)	Prisms and pyramids Nets
	Properties of 3D objects (6)	Constructing prisms and pyramids
	MA3-15MG manipulates, classifies and draws two-dimensional shapes, including equilateral, isosceles and scalene triangles, and describes their properties	Properties of 2D shapes (5)
Drawing 2D shapes		
Rigid transformations		
Symmetry		
Enlarging 2D shapes		
Properties of 2D shapes (6)		Diagonals of 2D shapes
		Circles
	Rigid transformations	

MA3-16MG measures and constructs angles, and applies angle relationships to find unknown angles	Angles & angle relationships (5)	Identifying and measuring angles
		Constructing and classifying angles
	Angles & angle relationships (6)	Adjacent and vertically opposite angles
MA3-17MG locates and describes position on maps using a grid-reference system	Maps & grid references (5)	Grid-referenced maps
		Using landmarks and directional language

### 3 Statistics and Probability

Outcome	Quests	Content
MA3-18SP uses appropriate methods to collect data and constructs, interprets and evaluates data displays, including dot plots, line graphs and two-way tables	Data investigations (5)	Categorical and numerical data
		Constructing data displays
		Describing and interpreting data sets
	Data investigations (6)	Two-way tables
		Side-by-side column graphs
		Comparing & selecting bivariate data displays
MA3-19SP conducts chance experiments and assigns probabilities as values between 0 and 1 to describe their outcomes	Probability values (5)	Outcomes of chance experiments
		Probabilities from 0 to 1
	Probability values (6)	Frequency and fairness in chance experiments
		Probability as a fraction, decimal or percent
		Chance experiments with trials and sampling

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