Mathletics
NSW Curriculum
Skill Quests

Stage 4

June, 2022

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1 Number and Algebra

Outcome	Quests	Content
Compares, orders and calculates with integers, applying a range of strategies to aid computation	Working with integers	Laws of multiplication and division
		Compare, order, add and subtract integers
		Solving temperature problems
		Applying the four operations to integers
Operates with fractions, decimals and percentages	Fractions, decimals & percentages	Fractions: improper and proper fractions
		Fractions: comparing and ordering
		Fractions: adding fractions
		Fractions: subtracting fractions
		Fractions: adding and subtracting fractions
		Multiplying decimals & finding quantities
		Multiplying fractions & finding quantities
		Dividing integers, fractions and decimals
		Dividing fractions by fractions and integers
		Expressing one quantity as a fraction of another
		Rounding decimals
		Investigate terminating and recurring decimals
		Converting decimals
		Converting percentages
		Converting fractions to decimals
		Converting fractions to percentages
		Ordering fractions, decimals and percentages
		Investigating irrational numbers
		Percentages of quantities
		Increasing and decreasing amounts
		Problem solving involving percentages
Solves financial problems involving purchasing goods	Solving financial maths problems	Calculating GST
		Best buys and discounts

		Solving problems involving profit and loss
Operates with ratios and rates, and explores their graphical representation	Rates and ratios	Using simple ratios
		Simplifying ratios
		Solve simple problems involving ratios
		Solve problems involving ratios
		Ratios involving more than two parts
		Converting ratios
		Using rates
		Distance/time graphs
		Graphs and rates extension
Generalises number properties to operate with algebraic expressions	Operating with algebraic expressions	Variable and equivalent algebraic expressions
		Simplifying algebraic expressions
		Simplifying algebraic expressions using mixed operations
		Number patterns
		Evaluating formulae
		Creating algebraic expressions
		Extending and applying the distributive law
		Factorising algebraic expressions
		Factorising algebraic expressions 2
Operates with positive-integer and zero indices of numerical bases	Indices	Introducing indices
		Divisibility, indices and factors
		Working with square roots
		Working with cube roots
		Solving problems with square and cube roots
		Investigating index laws
Uses algebraic techniques to solve simple linear and quadratic equations	Solving equations	Equations introduction
		Solving 1-step equations: addition/subtraction
		Solving 1-step equations: multiplication
		Solving 1-step equations: division
		Solving 1-step equations: mixed operations
		Solving 2-step equations: variable in numerator
		Solving 2-step equations: variable in denominator
		Solving 3-step equations
		Solving equations with variable on both sides

		Solving equations involving brackets
	5	Solving basic quadratic equations
Creates and displays number patterns; graphs and analyses linear relationships; and performs transformations on the Cartesian plane	Relationships & transformations	Using the coordinate system
		Transformations on the cartesian plane
		Working with Linear Sequences
		Table of values
		Solving linear equations graphically

2 Measurement and Geometry

Outcome	Quests	Content
Calculates the perimeters of plane shapes and the circumferences of circles	Perimeter of quadrilaterals and circles	Finding the perimeter
		Identifying parts of circles
		Working with circumferences of circles
		Finding perimeters of parts of circles
		Finding arc lengths and perimeters of sectors
Uses formulas to calculate the areas of quadrilaterals and circles, and converts between units of area	Solving area problems	Choosing and converting units of area
		Solving area problems involving rectangles
		Solving area problems involving triangles
		Solving area problems involving parallelograms
		Solving area problems: simple composite figures
		Solving area problems involving trapeziums
		Solving area problems involving rhombuses
		Solving area problems involving kites
		Solving area problems involving circles
		Solving area problems involving parts of circles
Uses formulas to calculate the volumes of prisms and cylinders, and converts between units of volume	Solving volume problems	Exploring different views of prisms and solids
		Choosing and converting units of volume
		Finding the volume of prisms
		Finding the volume of rectangular prisms
		Finding the volume of triangular prisms
		Solving problems involving prisms
		Solving problems involving cylinders
Performs calculations of time that involve mixed units, and interprets time zones	Working with time and time zones	Solving problems involving time
		Rounding and converting time
		Solving problems involving time zones

Applies Pythagoras' theorem to calculate side lengths in right-angled triangles, and solves related problems	Pythagoras' Theorem	Identifying sides on right-angled triangles
		Finding a shorter side using Pythagoras' Theorem
		Finding the hypotenuse using Pythagoras' Theorem
		Solving problems involving Pythagoras' Theorem
		Exploring Pythagorean Triads
		Using the Converse of Pythagoras' Theorem
		Exploring irrational numbers (surds)
		Solving Pythagoras' Theorem problems: exact values
Classifies, describes and uses the properties of triangles and quadrilaterals, and determines congruent triangles to find unknown side lengths and angles	Triangles and quadrilaterals	Labelling and naming conventions
		Properties of triangles
		Convex and non-convex quadrilaterals
		Properties of quadrilaterals
		Reasoning, sketching and describing quadrilaterals
		Line and rotational symmetry
		Solving problems involving interior angle sums
		Using properties of triangles & quadrilaterals
		Defining and working with congruence
		Determining congruence in triangles
		Using properties of congruent triangles
Identifies and uses angle relationships, including those related to transversals on sets of parallel lines	Angle relationships	Geometry conventions
		Angles at a point
		Parallel and perpendicular line conventions
		Angle relationships on parallel lines
		Proving parallel lines
		Geometric reasoning using angle properties

3 Statistics and Probability

Outcome	Quests	Content
Collects, represents and interprets single sets of data, using appropriate statistical displays	Interpreting and representing data	Collecting data
		Exploring data sampling
		The relationship between a sample & the population
		Issues with data from primary & secondary sources
		Collecting and interpreting data
		Tallies and frequency distribution tables
		Frequency histograms and polygons
		Frequency histograms and polygons: grouped data
		Dot plots
		Ordered stem-and-leaf plots
		Divided bar graphs
		Sector graphs
		Line graphs
		Interpreting a variety of different graphs
Analyses single sets of data using measures of location, and range	Analysing single sets of data	Calculating the mean
		Median mode and range
		Clusters, gaps and outliers in data
		Using mean, median, mode to analyse data displays
Represents probabilities of simple and compound events	Understanding probability	Language of chance experiments
		Sample spaces
		Chance experiments
		Language of probability
		Understanding basic probability
		Complementary events
		Language of probability to describe events
		Understanding and constructing Venn diagrams
		Using Venn diagrams to solve problems
		Interpreting and constructing two-way tables
		Two-way tables and Venn diagrams

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