

Mathletics

3P Learning Progressions

Skill Quests

Grades 7 – 8
May, 2022

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Grade 7	3
1 Number and Algebra	3
2 Measurement	5
3 Geometry	6
4 Data	7
5 Chance and Probability	8
Grade 8	9
1 Number and Algebra	9
2 Measurement	10
3 Geometry	11
4 Data	12
5 Chance and Probability	13

Grade 7

1 Number and Algebra

Outcome	Quests	Content
Integers	Working with integers	Compare, order, add and subtract integers
	Laws of multiplication and division	Laws of multiplication and division
Number theory	Square and cube roots	Working with square roots
		Working with cube roots
		Solving problems with square and cube roots
Fractions, decimals and percentages	Expressing and comparing fractions	Fractions: improper and proper fractions
		Fractions: comparing and ordering
	Adding and subtracting fractions	Fractions: adding fractions
		Fractions: subtracting fractions
		Fractions: adding and subtracting fractions
	Multiplying & dividing fractions/decimals	Multiplying decimals & finding quantities
		Multiplying fractions & finding quantities
		Dividing integers, fractions and decimals
		Dividing fractions by fractions and integers
	One quantity as a fraction of another	Expressing one quantity as a fraction of another
	Rounding decimals	Rounding decimals
	Explore terminating & recurring decimals	Explore terminating & recurring decimals
	Fractions, decimals and percentages	Converting decimals
		Converting percentages
		Converting fractions to decimals
Converting fractions to percentages		
Ordering fractions, decimals and percentages		
Percentages of quantities	Percentages of quantities	
Financial maths	Best buys and discounts	Best buys and discounts
Rates and ratios	Ratios	Using simple ratios
		Simplifying ratios

		Solve simple problems involving ratios
	Investigating graphs	Distance/time graphs
		Graphs and rates extension
Algebraic expressions	Equivalent algebraic expressions	Equivalent algebraic expressions
	Simplifying algebraic expressions	Simplifying algebraic expressions
	Algebraic patterns and expressions	Number patterns
		Evaluating formulae
	Creating algebraic expressions	
Indices/exponents	Indices/exponents	Introducing indices/exponents
		Divisibility and factors
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
Coordinate Geometry	Using the coordinate system	Using the coordinate system
	Transformations and symmetry	Transformations on a set of axes
		Line and rotational symmetry

2 Measurement

Outcome	Quests	Content
Temperature	Temperature	Solving temperature problems
Area	Solve area problems	Solving area problems involving rectangles
		Solving area problems involving triangles
		Solving area problems involving parallelograms
		Solving area problems: simple composite figures
Volume	Volume of rectangular prisms	Volume of rectangular prisms
	Explore different views of prisms/solids	Explore different views of prisms/solids

3 Geometry

Outcome	Quests	Content
Shape	Geometry conventions	Labels and naming conventions
		Geometry conventions
		Describing cross sections of 3D figures
	Triangles	Properties of triangles
		Triangle Inequality Theorem
	Quadrilaterals	Convex and non-convex quadrilaterals
		Reasoning, sketching and describing quadrilaterals
Triangles and quadrilaterals	Using properties of triangles & quadrilaterals	
Angles	Angle relationships and parallel lines	Angles at a point
		Parallel and perpendicular line conventions
		Angle relationships on parallel lines
	Parallel lines and geometric reasoning	Proving parallel lines
		Geometric reasoning using angle properties

4 Data

Outcome	Quests	Content
Data	Collecting and interpreting data	Collecting and interpreting data
	Representing data	Tallies and frequency distribution tables
		Histograms and polygons
		Histograms and polygons: grouped data
		Dot plots
		Ordered stem-and-leaf plots
		Divided bar graphs
		Sector/pie graphs
		Line graphs
	Interpreting a variety of different graphs	
	Mean, median, mode and range	Calculating the mean
Median mode and range		
Using mean, median, mode to interpret data displays	Using mean/median/mode to interpret data	

5 Chance and Probability

Outcome	Quests	Content
Chance and probability	Chance experiments and sample spaces	Language of chance experiments
		Sample spaces
		Chance experiments
	Probability	Language of probability
		Understanding basic probability

Grade 8

1 Number and Algebra

Outcome	Quests	Content
Integers	Applying the four operations to integers	Applying the four operations to integers
Fractions, decimals and percentages	Working with percentages	Increasing and decreasing amounts
		Problem solving involving percentages
Financial maths	Solving problems involving profit & loss	Solving problems involving profit and loss
Rates and ratios	Rates and ratios	Solve problems involving ratios
		Ratios involving more than two parts
		Converting ratios
		Using rates
Algebraic expressions	Working with algebraic expressions	Simplifying algebraic expressions using mixed operations
		Extending and applying the distributive law
	Factorising algebraic expressions	Factorising algebraic expressions
		Factorising algebraic expressions 2
Index laws	Investigating index laws	Investigating index laws
Equations	Solving equations	Solving 3-step equations
		Solving equations with variable on both sides
		Solving equations involving brackets
		Solving basic quadratic equations
Number theory	Irrational numbers	Investigating irrational numbers
		Exploring irrational numbers (surds)
Coordinate geometry	Linear relationships	Table of values
		Solving linear equations graphically
Patterns	Number patterns and sequences	Working with linear sequences

2 Measurement

Outcome	Quests	Content
Perimeter	Perimeter of quadrilaterals	Finding the perimeter
Area	Area of quadrilaterals	Solving area problems involving trapeziums
		Solving area problems involving rhombuses
		Solving area problems involving kites
Circles	Working with circles	Identifying parts of circles
		Working with circumferences of circles
		Finding perimeters of parts of circles
		Finding arc lengths and perimeters of sectors
		Solving area problems involving circles
		Solving area problems involving parts of circles
Volume	Units of area and volume	Units of area and volume
		Choosing and converting units of volume
	Volume of prisms	Finding the volume of prisms
		Finding the volume of rectangular prisms
		Finding the volume of triangular prisms
		Solving problems involving prisms
	Volume of cylinders	Solving problems involving cylinders
Time	Solve problems involving time	Solving problems involving time
		Rounding and converting time
		Solving problems involving time zones

3 Geometry

Outcome	Quests	Content
Triangles with right angles	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
		Solving Pythagoras' Theorem problems: exact values
Congruence	Defining and working with congruence	Defining and working with congruence
	Determining congruence in triangles	Determining congruence in triangles
	Using properties of congruent triangles	Using properties of congruent triangles

4 Data

Outcome	Quests	Content
Data	Collecting data	Collecting data
	Data sampling and populations	The relationship between a sample & the population
	Clusters, gaps and outliers in data	Clusters, gaps and outliers in data

5 Chance and Probability

Outcome	Quests	Content
Chance and probability	Complementary events	Complementary events
	Probability language to describe events	Probability language to describe events
	Venn diagrams and Two-Way tables	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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