Mathletics New Zealand Program of Studies Skill Quests





May, 2022

Year 7 – 8

Mathletics

New Zealand Program of Studies Skill Quests May 2022

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Year 7

1 Number and Algebra

1.1 Number strategies and knowledge

Outcome	Quests	Content
NA4-1: Use a range of	Use numeracy strategies to	Using numeracy strategies
multiplicative strategies when	multiply	to multiply
operating on whole numbers.	Use strategies to multiply/divide	Using strategies to multiply whole numbers
		Using standard algorithms
		Using strategies to divide whole numbers
		Using standard algorithms to divide
		Multiplying & dividing whole numbers in context
		Using the associative law for multiplication
		Using the commutative law for multiplication
		Testing for divisibility
	Find factors/multiples/primes up to 100	Finding factors of numbers up to 100
		Finding multiples of numbers up to 100
		Finding prime factors for numbers up to 100
	Add/subtract whole numbers	Adding/subtracting whole numbers
	Use squares, cubes & roots	Finding squares and cubes
		Finding square and cube roots
	Use index notation	Using index notation
NA4-2: Understand addition and subtraction of fractions,	Add/subtract fractions	Add & subtract fractions - common denominator
decimals, and integers.		Add & subtract fractions - related denominator
	Add/subtract decimals	Adding & subtracting decimals
	Add/subtract integers	Adding & subtracting integers
NA4-3: Find fractions, decimals, and percentages of	Calculate fraction of a quantity	Calculating a fraction of a quantity
amounts expressed as whole numbers, simple fractions, and		Multiplying fractions by whole numbers
decimals.	Multiply fractions	Multiplying fractions

	Calculate decimals of a	Calculating decimals of a
	quantity	quantity
	Multiply & divide decimals	Multiplying decimals
		Dividing decimals
	Calculate percentage of a	Calculating a percentage of
	quantity	a quantity
		Calculating percentage
		discounts
		Calculating best buy
		amounts
		Calculating taxation: GST
	Multiply/divide integers	Multiplying & dividing
		integers
NA4-4: Apply simple linear	Order fractions, decimals &	Ordering & comparing
proportions, including ordering	percentages	fractions
tractions.		Ordering & comparing
		decimals
		Ordering & comparing
		percentages
		Ordering fractions, decimals
	Order/compare integers	A percentages
	Order/compare integers	integers
	Lise ratios/rates to solve	Integers
	problems	Lising ratios to solve
	problems	problems
		Using rates to solve
		problems
NA4-5: Know the equivalent	Calculate equivalent fractions	Calculatina equivalent
decimal and percentage forms	•	fractions
for everyday fractions.		Converting between mixed
		and improper fractions
	Convert	Converting fractions to
	fractions/decimals/percentages	decimals
		Converting decimals to
		fractions
		Converting decimals to
		percentages
		Converting percentages to
		decimals
		Converting fractions to
		percentages
		Converting percentages to
NA4 G Know the relative si	Decembro alace value in	
nA4-6: Know the relative size	Recognise place value in	Recognising place value in
and place value structure of	Dound docimals	Dounding docimate
and decimals to three places		Liging standard form for
and decimals to three places.	Use standard form	whole numbers
		whole humbers

1.2 Equations and expressions

Outcome	Quests	Content
NA4-7: Form and solve simple	Form & solve linear	Forming linear equations &
linear equations.	equations	expressions
		Using substitution to
		solve/check answers
		Solving linear equations using
		models
		Solving linear equations
		Linear equations including
		non-integer solutions

1.3 Patterns and relationships

	Quests	Content
Outcome		
NA4-8: Generalise properties of	Identify linear patterns	Identifying linear patterns
multiplication and division with	Simplify algebraic	Simplifying algebraic
whole numbers.	expressions	expressions
NA4-9: Use graphs, tables, and	Use tables/graphs for	Using tables to describe linear
rules to describe linear relationships	linear patterns	patterns
found in number and spatial		Using graphs to describe
patterns.		linear patterns

2 Geometry and Measurement

2.1 Measurement

Outcome	Quests	Content
GM4-1: Use appropriate scales,	Use metric units -	Using length units - km, m, cm,
devices, and metric units for length,	length/mass/capacity	mm
area, volume and capacity, weight		Using weight/mass units - kg,
(mass), temperature, angle, and		g, mg
time.		Using capacity/volume units -
		mL, L
		Recognise suitable units -
		length/mass/capacity
	Use other units of	Measuring & using
	measurement	temperature
		Using different measures of
		time
GM4-2: Convert between metric	Convert units -	Converting between metric
units, using whole numbers and	length/mass/capacity	units of length
commonly used decimals.		Converting between metric
		units of weight/mass
		Converting between metric
		units - capacity/volume
GM4-3: Use side or edge lengths to	Calculate perimeters of	Calculating perimeters of 2D
find the perimeters and areas of	2D shapes	shapes
rectangles, parallelograms, and	Calculate area of	Calculating area of rectangles
triangles and the volumes of	simple 2D shapes	Calculating area of triangles
cuboids.		Calculating area of
		parallelograms
	Calculate volume of	Calculating volume of prisms
	prisms	
GM4-4: Interpret and use scales,	Read scales &	Reading scales & timetables to
timetables, and charts.	timetables in context	solve problems

2.2 Shape

Outcome	Quests	Content
GM4-5: Identify classes of two- and	Classify 2D shapes by	Classifying triangles by their
three-dimensional shapes by their	properties	properties
geometric properties.		Classifying quadrilaterals by
		their properties
		Special triangles and
		quadrilaterals
	Identify parts of a circle	Identifying parts of a circle
	Identify & use angle	Identifying & using adjacent
	properties	angles
		Supplementary angles
		Complementary angles

		Calculating angles of revolution
		Exploring vertically opposite angles
		Applying geometric reasoning
		Identifying parallel and
		perpendicular lines
	Identify	Identifying regular and
	regular/irregular prisms	irregular prisms
GM4-6: Relate three-dimensional	Connect prisms to nets	Connecting prisms to their
models to two-dimensional		nets
representations, and vice versa.		Connecting prisms & pyramids
		to nets
		Connecting 3D objects to nets
	Connect prisms to 2D	Connecting prisms & their 2D
	views	views

2.3 Position and orientation

Outcome	Quests	Content
GM4-7: Communicate and interpret	Use intercardinal	Using intercardinal compass
locations and directions, using	compass directions	directions
compass directions, distances, and	Use scale drawings on	Using scale drawings on maps
grid references.	maps	
	Use the Cartesian	Using the Cartesian
	coordinate system	coordinate system

2.4 Transformations

Outcome	Quests	Content
GM4-8: Use the invariant properties	Perform a range of	Using the language of
of figures and objects under	transformations	transformations
transformations (reflection, rotation,		Performing reflections &
translation, or enlargement).		identifying line symmetry
		Perform rotations & identify
		rotational symmetry
		Performing translations
		Performing enlargements &
		identify scale factors

3 Statistics

3.1 Statistical investigation

Outcome	Quests	Content
S4-1: Plan and conduct	Setup statistical	Setting up statistical
investigations using the statistical	investigations	investigations
enquiry cycle:	Calculate measures of	Calculate central tendency:
determining appropriate variables	middle & spread	mean, median, mode
and data collection methods;		Calculating the spread - range
gathering, sorting, and displaying	Display data on graphs	Displaying data sets on a
multivariate category,		variety of graphs
measurement, and time-series data	Interpret results &	Interpreting results & displays
to detect patterns, variations,	displays	Representing stem and leaf
relationships, and trends;		graphs
comparing distributions visually;		Interpreting pie charts
communicating findings, using		Introducing box-and-whisker
appropriate displays.		plots
		Interpreting histograms
		Comparing displays
		Drawing conclusions to
		answer the question

3.2 Statistical literacy

Outcome	Quests	Content
S4-2: Evaluate statements made by others about the findings of	Interpret secondary data	Interpreting secondary data
statistical investigations and probability activities.		Looking for misleading information

3.3 Probability

Outcome	Quests	Content
S4-3: Investigate situations that	Probability -	Using the language of
involve elements of chance by	theoretical/experimental	probability
comparing experimental		Calculating probabilities
distributions with expectations		Using theoretical probability
from models of the possible		Using experimental probability
outcomes, acknowledging variation		
and independence.		
S4-4: Use simple fractions and	Use frac/dec &	Using frac/dec & percentages
percentages to describe	percentages in chance	in probability
probabilities.		

Year 8

1 Number and Algebra

1.1 Number strategies and knowledge

Outcome	Quests	Content
NA4-1: Use a range of	Use numeracy strategies to	Using numeracy strategies
multiplicative strategies when	multiply	to multiply
operating on whole numbers.	Use strategies to multiply	Use mental & written
	whole numbers	strategies to multiply
	Use strategies to divide whole	Using strategies to divide
	numbers	whole numbers
	Use the laws of multiplication	Using the laws of
		multiplication
	Find factors/multiples/primes up to 144	Finding factors of numbers up to 144
		Finding multiples of
		numbers up to 144
		Using prime factors for
		numbers up to 144
	Use squares, cubes & roots	Using squares, cubes &
		roots
		Finding roots of higher
		powers
	Use index notation & factorials	Using index notation
		Applying index laws
		Introducing factorials
NA4-2: Understand addition	Add & subtract fractions	Adding & subtracting
and subtraction of fractions,		fractions
decimais, and integers.		Add & subtract with mixed
	Add & subtract desimals	Adding & subtracting
	Add & subtract decimals	Adding & subtracting
	Add & subtract integers	
	Add & Subtract integers	integers
	Add rational numbers	Adding rational numbers
NA4-3: Find fractions.	Calculate a fraction of a	Calculating a fraction of a
decimals, and percentages of	quantity	quantity
amounts expressed as whole	Multiply/divide fractions &	Multiplying fractions
numbers, simple fractions, and	decimals	Dividing fractions
decimals.		Dividing decimals
	Calculate a percentage of a	Calculating a percentage of
	quantity	a quantity
		Calculating discounts and
		best buys
		Calculating taxation: GST
	Compare quantities as a	Comparing quantities as a
	percentage	percentage

		Multiplying & dividing
		integers
NA4-4: Apply simple linear	Order	Order/compare proper
proportions, including ordering	fractions/decimals/percentages	fractions
fractions.		Order/compare mixed &
		improper fractions
		Ordering & comparing
		decimals
		Ordering fractions,
		decimals & percentages
		Order integers
		Ordering & comparing
		integers
	Order rational numbers	Ordering rational numbers
	Use ratios to solve problems	Simplifying ratios
		Using ratios to solve
		problems
NA4-5: Know the equivalent	Calculate equivalent fractions	Calculating equivalent
decimal and percentage forms		fractions
for everyday fractions.		Converting between mixed
		& improper fractions
	Convert	Converting fractions to
	fractions/decimals/percentages	decimals
		Converting decimals to
		fractions
		Converting decimals to
		percentages
		Converting percentages to
		decimals
		Converting fractions to
		percentages
		Converting percentages to
		fractions
		Connecting fractions,
		decimals & percentages
NA4-6: Know the relative size	Round decimals	Rounding decimals
and place value structure of	Use standard form	Using standard form
positive and negative integers		
and decimals to three places.		

1.2 Equations and expressions

Outcome	Quests	Content
NA4-7: Form and solve simple	Form & solve linear	Forming linear equations
linear equations.	equations	Solving 1 step linear equations
		Solving 2 step linear equations
		Working with linear equations

1.3 Patterns and relationships

Outcome	Quests	Content
NA4-8: Generalise properties of	Identify linear patterns	Identifying linear patterns
multiplication and division with	Simplify algebraic	Simplifying algebraic
whole numbers.	expressions	expressions
NA4-9: Use graphs, tables, and	Use tables/graphs for	Using tables to describe linear
rules to describe linear relationships	linear patterns	patterns
found in number and spatial		Using graphs to describe
patterns.		linear patterns

2 Geometry and Measurement

2.1 Measurement

Outcome	Quests	Content
GM4-1: Use appropriate scales,	Use metric units -	Using length units - km, m,
devices, and metric units for	length/mass/capacity	cm, mm
length, area, volume and capacity,	Use units for time	Large and small time
weight (mass), temperature,		intervals
angle, and time.		Converting units of time
GM4-2: Convert between metric	Convert units:	Converting between different
units, using whole numbers and	length/mass/capacity/area	metric units - length
commonly used decimals.		Converting between metric
		units of weight/mass
		Converting between metric
		units of capacity/volume
		Converting between units of
		area
GM4-3: Use side or edge lengths	Find perimeters of	Calculating perimeters of
to find the perimeters and areas	composite shapes	composite shapes
of rectangles, parallelograms, and	Calculate areas incl	Calculating area of
triangles and the volumes of	composite shapes	rectangles
cuboids.		Calculating area of triangles
		Calculating area of
		parallelograms
		Calculating area of
		composite shapes
	Calculate volume of	Calculating volume of prisms
	prisms	
GM4-4: Interpret and use scales,	Read scales & timetables	Reading scales & timetables
timetables, and charts.	in context	to solve problems

2.2 Shape

Outcome	Quests	Content
GM4-5: Identify classes of two- and	Classify 2D shapes by	Classifying quadrilaterals by
three-dimensional shapes by their	properties	their properties
geometric properties.		Identifying & using angle
		properties of triangles
		Identify/use angle properties
		of quadrilaterals
		Identifying angle properties of
		regular polygons
	Use parallel line rules	Identifying & using parallel line
		rules
		Using angle relationships -
		parallel lines

GM4-6: Relate three-dimensional	Connect prisms to 2D	Connecting prisms & their 2D
models to two-dimensional	views/cross-section	views
representations, and vice versa.		Identifying cross-sections of
		prisms

2.3 Position and orientation

Outcome	Quests	Content
GM4-7: Communicate and interpret	Use compass/true	Using compass & true
locations and directions, using	bearings	bearings
compass directions, distances, and	Use scale drawings on	Using scale drawings on maps
grid references.	maps	
	Use the Cartesian	Using the Cartesian
	coordinate system	coordinate system

2.4 Transformations

Outcome	Quests	Content
GM4-8: Use the invariant properties	Perform a range of	Performing reflections
of figures and objects under	transformations	Performing rotations
transformations (reflection, rotation,		Performing enlargements &
translation, or enlargement).		identify scale factors
		Use a combination of
		transformations & in context

3 Statistics

3.1 Statistical investigation

Outcome	Quests	Content
S4-1: Plan and conduct	Setup statistical	Setting up statistical
investigations using the statistical	investigations	investigations
enquiry cycle:	Calculate measures of	Calculate the central tendency
determining appropriate variables	middle & spread	- mean, median, mode
and data collection methods;		Calculating the spread -
gathering, sorting, and displaying		range, IQR
multivariate category,		Calculating statistics to
measurement, and time-series data		describe data
to detect patterns, variations,	Display data on graphs	Constructing frequency
relationships, and trends;		histograms & polygons
comparing distributions visually;		Constructing dot plots
communicating findings, using		Constructing stem and leaf
appropriate displays.		plots
		Constructing box and whisker
		plots
	Interpret results &	Interpreting bar graphs &
	displays	histograms
		Interpreting dot plots
		Interpreting stem and leaf
		graphs
		Interpreting line graphs
		Interpreting box-and-whisker
		plots
		Interpreting data in various
		displays
		Drawing conclusions to
		answer the investigation
		Recognising sampling
		variation

3.2 Statistical literacy

Outcome	Quests	Content
S4-2: Evaluate statements made by	Interpret secondary	Interpreting secondary data
others about the findings of	data	Looking for misleading
statistical investigations and		information
probability activities.		

3.3 Probability

Outcome	Quests	Content
S4-3: Investigate situations that	Probability -	Understanding the language
involve elements of chance by	theoretical/experimental	of probability
comparing experimental		Understanding theoretical
distributions with expectations		probability
from models of the possible		
outcomes, acknowledging variation		
and independence.		
S4-4: Use simple fractions and	Use frac/dec &	Using frac/dec & percentages
percentages to describe	percentages in chance	in probability
probabilities.		



For more information about Mathletics, contact our friendly team.

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