Mathletics

Manitoba Program of Studies

Understanding Practice and Fluency (UPF)

Grades 3 – 6

October, 2021

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Grade 3

1 Number

1.1 Develop number sense

Outcome	Quests	Content
1. Say the number sequence between any two given numbers forward and backward: from 0 to 1000 by 10s or 100s, using any starting point, 5s, using starting points that are multiples of 5, 25s, using starting points that are multiples of 25. From 0 to 100 by 3s, using starting points that are multiples of 3, 4s, using starting points that are multiples of 4	Count to 1000	Counting by 5s to 1000, forward & backward
		Counting by 10s to 1000, forward & backward
		Counting by 100s to 1000, forward & backward
		Counting by 1s to 1000, forward & backward
		Count by multiples of 3 to 100, forward/backward
		Count by multiples of 4 to 100, forward & backward
		Counting by 25s to 1000, forward & backward
2. Represent and describe numbers to 1000, concretely, pictorially, and symbolically	Represent & describe numbers to 1000	Reading & writing numbers up to 1000
		Connecting multiples of 10 & 100 to number words
3. Compare and order numbers to 1000	Compare & order numbers to 1000	Identifying numbers before & after within 1000
		Comparing numbers to 1000
		Ordering numbers to 1000
4. Estimate quantities less than 1000 using referents	Estimate quantities less than 1000	Estimating quantities using referents
5. Illustrate, concretely and pictorially, the meaning of place value for numerals to 1000	Place value of numbers up to 1000	Identifying place value of numbers to 1000
		Using place value to partition 3-digit numbers
		Non-standard partitioning, 3-digit numbers
		Solving place value number problems
6. Describe and apply mental mathematics strategies for adding two 2-digit numerals, such as: adding from left to right, taking one addend to the nearest multiple of ten and then compensating, using doubles	Add 2-digit numbers, mental strategies	Adding 2-digit numbers, jump strategy
		Adding 2-digit numbers, split strategy
		Adding 2-digit numbers, bridging to ten
		Adding 2-digit numbers, using place value
		Adding tens to a 2-digit number, models

7. Describe and apply mental mathematics strategies for subtracting two 2-digit numerals, such as: taking the subtrahend to the nearest multiple of ten and then compensating, thinking of addition, using doubles	Subtract 2-digit numbers, mental methods	Subtracting 2-digit numbers, jump strategy
		Subtracting 2-digit numbers, split strategy
		Subtracting 2-digit numbers, bridging to ten
		Subtracting 2-digit numbers, round & compensate
		Subtracting tens from a 2-digit number, models
8. Apply estimation strategies to predict sums and differences of two 2-digit numerals in a problem-solving context	Estimate - two 2-digit number problems	Estimating with two 2-digit number problems
9. Demonstrate an understanding of addition and subtraction of numbers with answers to 1000 (limited to 1-, 2-, and 3-digit numerals) by: using personal strategies for adding and subtracting with and without the support of manipulatives, creating and solving problems in contexts that involve addition and subtraction of numbers concretely, pictorially, and symbolically	Addition & subtraction to 1000	Adding up to 1000 using jump strategy
		Adding up to 1000 using split strategy
		Adding up to 1000 using bridging to ten
		Adding up to 1000 using rounding & compensating
		Adding up to 1000 using formal algorithm
		Subtracting up to 1000 using jump strategy
		Subtracting up to 1000 using split strategy
		Subtracting up to 1000 using bridging to ten
		Subtract up to 1000 using rounding & compensating
		Subtracting up to 1000 using formal algorithm
		Adding & subtracting to 1000 using jump strategy
		Adding & subtracting to 1000 using split strategy
		Representing add/subtract problems using bar model
		Solving addition & subtraction word problems
10. Apply mental math strategies to determine addition facts and related subtraction facts to 18 (9 + 9)	Mental strategies - add/sub facts to 18	Using the commutative property of addition
		Adding 3 single-digit numbers
		Finding the difference between 2 numbers
		Using doubles & near doubles to add & subtract
		Mental strategies for addition & subtraction facts
		Adding & subtracting zero

11. Demonstrate an understanding of multiplication to 5 × 5 by: representing and explaining multiplication using equal grouping and arrays, creating and solving problems in context that involve multiplication, modelling multiplication using concrete and visual representations, and recording the process symbolically, relating multiplication to repeated addition, relating multiplication to division	Multiplication concepts to 5 x 5	Using repeated addition to multiply
		Exploring multiplication by 2
		Exploring multiplication by 3
		Exploring multiplication by 4
		Exploring multiplication by 5
		Multiplication facts to 5 x 5
12. Demonstrate an understanding of division by: representing and explaining division using equal sharing and equal grouping, creating and solving problems in context that involve equal sharing and equal grouping, modelling equal sharing and equal grouping using concrete and visual representations, and recording the process symbolically, relating division to repeated subtraction, relating division to multiplication (limited to division related to multiplication facts up to 5 × 5)	Division concepts (up to 5 x 5 facts)	Using repeated subtraction to divide
		Dividing by 2
		Dividing by 3
		Dividing by 4
		Dividing by 5
	Multiplication & division relationship	Modelling multiplication & division relationship
		Solving problems using arrays
		Solving multiplication & division word problems
13. Demonstrate an understanding of fractions by: explaining that a fraction represents a portion of a whole divided into equal parts, describing situations in which fractions are used, comparing fractions of the same whole with like denominators	Fraction concepts	Finding halves
		Finding fourths
		Working with halves & fourths
		Working with thirds
		Working with sixths
		Working with thirds & sixths
		Working with fifths
		Working with eighths
		Working with halves, fourths & eighths
		Working with halves, thirds, fourths
		Representing simple fractions
		Ordering & comparing fractions

2 Patterns and Relations (Patterns)

2.1 Use patterns to describe the world and solve problems

Outcome	Quests	Content
1. Demonstrate an understanding of increasing patterns by: describing, extending, comparing, creating patterns using manipulatives, diagrams, and numbers (to 1000)	Increasing patterns	Working with increasing number patterns to 100
		Working with increasing number patterns to 1000
		Working with visual patterns
2. Demonstrate an understanding of decreasing patterns by: describing, extending, comparing, creating patterns using manipulatives, diagrams, and numbers (starting from 1000 or less)	Decreasing patterns	Working with decreasing number patterns within 100
		Working with decreasing number pattern within 1000

3 Patterns and Relations (Variables and Equations)

3.1 Represent algebraic expressions in multiple ways

Outcome	Quests	Content
3. Solve one-step addition and subtraction equations involving symbols representing an unknown number	One-step add/sub problems with unknowns	One-step number problems with unknowns up to 20
		One-step number problems with unknowns up to 100

4 Shape and Space (Measurement)

4.1 Use direct or indirect measurement to solve problems

Outcome	Quests	Content
1. Relate the passage of time to common activities using nonstandard and standard units (minutes, hours, days, weeks, months, years)	Understand passage of time	Understanding passage of time concepts
		Introducing time in hours, minutes & seconds
2. Relate the number of seconds to a minute, the number of minutes to an hour, and the number of days to a month in a problem-solving context	Understand measures of time	Using calendars
		Solving problems related to units of time
3. Demonstrate an understanding of measuring length (cm, m) by: selecting and justifying referents for the units cm and m, modelling and describing the relationship between the units cm and m, estimating length using referents, measuring and recording length, width, and height	Understand & measure length (m, cm)	Measuring in standard units: cm & m
		Selecting units of measurement: m, cm
		Ordering & comparing lengths: m, cm
		Converting between m & cm
		Estimating & measuring in cm
		Measuring length of 3D objects
4. Demonstrate an understanding of measuring mass (g, kg) by: selecting and justifying referents for the units g and kg, modelling and describing the relationship between the units g and kg, estimating mass using referents, measuring and recording mass	Understand & measure mass (kg, g)	Measuring mass: kilograms
		Measuring mass: grams
		Selecting units of measurement: kg, g
		Understanding relationships between kg & g
5. Demonstrate an understanding of perimeter of regular and irregular shapes by: estimating perimeter using referents for centimetre or metre, measuring and recording perimeter (cm, m), constructing different shapes for a given perimeter (cm, m) to demonstrate that many shapes are possible for a perimeter	Understand & measure perimeter	Understanding & calculating perimeter

5 Shape and Space (3-D Objects and 2-D Shapes)

5.1 Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them

Outcome	Quests	Content
6. Describe 3-D objects according to the shape of the faces, and the number of edges and vertices	3-D objects	Introducing the attributes of 3D objects
		Introducing cubes
		Introducing cylinders
		Introducing spheres
		Introducing cones
		Introducing prisms & pyramids
		Describing the attributes of 3-D objects
		Comparing & sorting 3-D objects
		Making basic models of 3-D objects
7. Sort regular and irregular polygons, including: triangles, quadrilaterals, pentagons, hexagons, octagons according to the number of sides	Sort & identify 2-D shapes	Comparing 2-D shapes
		Identifying & naming 2-D shapes
		Sorting 2-D shapes
	Regular & irregular polygons	Understanding regular & irregular polygons

6 Statistics and Probability (Data Analysis)

6.1 Collect, display, and analyze data to solve problems

Outcome	Quests	Content
1. Collect first-hand data and organize it using: tally marks, line plots, charts, lists to answer questions	Organize first-hand data	Understanding & using line plots
		Understanding & using data in lists & tables
		Understanding the statistical process
2. Construct, label, and interpret bar graphs to solve problems	Bar graphs	Understanding & using bar graphs

Grade 4

1 Number

1.1 Develop Number Sense

Outcome	Quests	Content
1. Represent and describe whole numbers to 10 000, pictorially and symbolically	Number concepts to 10 000	Reading & writing numbers to 10 000
		Understanding place value, 4-digit numbers
		Partitioning 4-digit numbers
2. Compare and order numbers to 10 000	Compare & order numbers to 10 000	Identifying numbers before & after to 10 000
		Identifying missing numbers to 10 000
		Comparing & ordering numbers to 10 000
3. Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3- and 4-digit numerals), concretely, pictorially, and symbolically, by: using personal strategies, using the standard algorithms, estimating sums and differences, solving problems	Addition to 10 000	Adding up to 10 000 using a number line
		Adding up to 10 000 using place value
		Adding up to 10 000 using a split strategy
		Adding up to 10 000 using rounding & compensating
		Adding up to 10 000 using algorithms
		Choosing mixed addition strategies
3. Demonstrate an understanding of addition of numbers with answers to 10 000 and their corresponding subtractions (limited to 3- and 4-digit numerals), concretely, pictorially, and symbolically, by: using personal strategies, using the standard algorithms, estimating sums and differences, solving problems	Subtraction to 10 000 Add & subtract word problems to 10 000	Subtracting up to 10 000 using a number line
		Subtracting up to 10 000 using place value
		Subtracting up to 10 000 using a split strategy
		Subtracting up to 10 000 using round & compensate
		Subtracting up to 10 000 using algorithms
		Choosing mixed subtraction strategies
		Solving addition & subtraction word problems
4. Explain the properties of 0 and 1 for multiplication and the property of 1 for division	Properties of 0 & 1	Multiplying by 1 or 0
		Dividing by 1

5. Describe and apply mental mathematics strategies, such as: skip-counting from a known fact, using halving/doubling, using doubling and adding one more group, using patterns in the 9s facts, using repeated doubling to develop an understanding of basic multiplication facts to 9 × 9 and related division facts	Multiplication facts to 9 x 9	Exploring multiplication by 2
		Exploring multiplication by 3
		Exploring multiplication by 4
		Exploring multiplication by 5
		Exploring multiplication by 6
		Exploring multiplication by 7
		Exploring multiplication by 8
		Exploring multiplication by 9
		Recalling multiplication facts to 7 x 7
	Division facts to 81 ÷ 9	Dividing by 2 & 5
		Dividing by 3 & 6
		Dividing by 4 & 8
		Dividing by 9
	Multiplication & division facts	Recalling multiplication/division facts to 7 x 7
		Understand relationship, multiplication & division
6. Demonstrate an understanding of multiplication (2- or 3-digit numerals by 1-digit numerals) to solve problems by: using personal strategies for multiplication with and without concrete materials, using arrays to represent multiplication, connecting concrete representations to symbolic representations, estimating products	Multiplication, 2- or 3-digit by 1-digit	Multiplying 2- or 3-digits by 1-digit, place value
		Multiplying 2- or 3-digits by 1-digit, doubling
		Multiplying 2- or 3-digits by 1-digit, area model
		Multiplying 2- or 3-digits by 1-digit, factoring
		Multiplying 2- or 3-digits by 1-digit, algorithm
		Multiply to 3-digits x 1-digit, expanded algorithm
		Multiply to 3-digits x 1-digit, round to estimate
		Multiplying by multiples of 10 & 100
7. Demonstrate an understanding of division (1-digit divisor and up to 2-digit dividend) to solve problems by: using personal strategies for dividing with and without concrete materials, estimating quotients, relating division to multiplication	Division, 2-digit by 1-digit	Dividing 2-digits by 1-digit, models
		Dividing 2-digits by 1-digit, halving
		Dividing 2-digits by 1-digit, related facts
		Dividing 2-digits by 1-digit, inverse relationship
		Dividing 2-digit by 1-digit, extended algorithm
		Dividing 2-digit by 1-digit, algorithm
		Dividing 2-digit by 1-digit, round to estimate
		Dividing by 1 using bar models

8. Demonstrate an understanding of fractions less than or equal to one by using concrete and pictorial representations to: name and record fractions for the parts of a whole or a set, compare and order fractions, model and explain that for different wholes, two identical fractions may not represent the same quantity, provide examples of where fractions are used	Represent fractions less than/equal to 1	Introducing the terms numerator & denominator
		Understanding fractions
		Representing halves, fourths & eighths
		Representing thirds & sixths
		Representing fifths
		Representing tenths
		Representing eighths
	Compare & order fractions	Comparing & ordering unit fractions with models
		Comparing & ordering common fractions with models
		Comparing fractions with the same numerator
		Comparing fractions with the same denominator
9. Describe and represent decimals (tenths and hundredths), concretely, pictorially, and symbolically	Decimals to hundredths	Introducing decimal notation
		Introducing decimal tenths
		Introducing decimal hundredths
10. Relate decimals to fractions (to hundredths)	Connect decimals & fractions	Connecting decimals & fractions, tenths
		Connecting decimals & fractions, hundredths
		Connecting decimals & fractions, up to hundredths
11. Demonstrate an understanding of addition and subtraction of decimals (limited to hundredths) by: using compatible numbers, estimating sums and differences, using mental math strategies to solve problems 11. Demonstrate an understanding of addition and subtraction of decimals (limited to hundredths) by: using compatible numbers, estimating sums and differences, using mental math strategies to solve problems	Add & subtract decimals to hundredths	Adding decimals to tenths
		Subtracting decimals to tenths
		Adding decimals to hundredths
		Subtracting decimals to hundredths
		Estimating decimal sums & differences
		Adding & subtracting decimal word problems
	Use decimals in the context of money	Using decimals in money
		Estimating & calculating change
		Solving word problems involving money

2 Patterns and Relations (Patterns)

2.1 Use patterns to describe the world and solve problems

Outcome	Quests	Content
1. Identify and describe patterns found in tables and charts, including a multiplication chart	Patterns in tables & charts	Exploring increasing number patterns
		Identifying number patterns up to 1000
		Investigating number sequences
2. Reproduce a pattern shown in a table or chart using concrete materials	Different representations in patterns	Relating patterns to tables or charts
		Identifying & describing additive number patterns
		Creating addition patterns from a given rule
		Creating multiplication patterns from a given rule
3. Represent and describe patterns and relationships using charts and tables to solve problems	Use patterns to solve problems	Using patterns to solve problems
4. Identify and explain mathematical relationships using charts and diagrams to solve problems	Use Venn & Carroll diagrams	Introducing Venn diagrams
		Introducing Carroll diagrams
		Relating Carroll & Venn diagrams
		Describing pattern rules

3 Patterns and Relations (Variables and Equations)

3.1 Represent algebraic expressions in multiple ways

Outcome	Quests	Content
5. Express a problem as an equation in which a symbol is used to represent an unknown number	Express a problem as an equation	Matching equations to word problems
		Using symbols to represent unknown numbers
6. Solve one-step equations involving a symbol to represent an unknown number	One-step equations using all operations	Finding missing numbers: add & subtract equations
		One-step equations: addition and subtraction
		One-step equations: multiplication and division
		One-step equations: balancing number sentences

4 Shape and Space (Measurement)

4.1 Use direct or indirect measurement to solve problems

Outcome	Quests	Content
1. Read and record time using digital and analog clocks, including 24-hour clocks	Read & record time	Telling time to the hour & half hour
		Telling time to the quarter hour
		Telling time to 5 minutes
		Telling time to the minute
		Using am & pm notation
		Using 24-hour time
2. Read and record calendar dates in a variety of formats	Read & record calendar dates	Reading & writing calendar dates
3. Demonstrate an understanding of area of regular and irregular 2-D shapes by: recognizing that area is measured in square units, selecting and justifying referents for the units cm2 or m2, estimating area by using referents for cm2 or m2, determining and recording area (cm2 or m2), constructing different rectangles for a given area (cm2 or m2) in order to demonstrate that many different rectangles may have the same area	Understand area	Measuring area using non-standard units
		Introducing formal units for area: cm^2
		Introducing formal units for area: m^2
	Measure the area of rectangles	Estimating & measuring areas of rectangles
		Comparing & ordering rectangular areas
		Finding the area of a rectangle, arrays
		Finding the area of a rectangle, area model
		Finding the area of rectangles, formula
	Approximate area, non-rectilinear shapes	Approximating areas, non-rectilinear shapes

5 Shape and Space (3-D Objects and 2-D Shapes)

5.1 Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them

Outcome	Quests	Content
5. Describe and construct rectangular and triangular prisms	Understand prisms	Identifying prisms in the environment
		Introducing rectangular & triangular prisms
		Comparing & describing prisms
		Connecting nets to rectangular & triangular prisms

6 Shape and Space (Transformations)

6.1 Describe and analyze position and motion of objects and shapes

Outcome	Quests	Content
6. Demonstrate an understanding of line symmetry by: identifying symmetrical 2-D shapes, creating symmetrical 2-D shapes, drawing one or more lines of symmetry in a 2-D shape	Recognize & draw line symmetry	Recognizing line symmetry
		Identifying & drawing lines of symmetry

7 Statistics and Probability (Data Analysis)

7.1 Collect, display, and analyze data to solve problems

Outcome	Quests	Content
1. Demonstrate an understanding of many-to-one correspondence	Understand many-to-one correspondence	Comparing pictographs - different correspondence
2. Construct and interpret pictographs and bar graphs involving many-to-one correspondence to draw conclusions	Graphs using many-to-one correspondence	Using pictographs with many-to-one correspondence
		Compare pictographs with different correspondence
		Using bar graphs with many-to-one correspondence

Grade 5

1 Number

1.1 Develop Number Sense

Outcome	Quests	Content
1. Represent and describe whole numbers to 1 000 000	Number concepts to 1 000 000	Reading & writing numbers up to 6 digits
		Comparing & ordering numbers up to 6 digits
		Identifying place value of 6-digit numbers
		Using place value to partition 6-digit numbers
2. Apply estimation strategies, including: front-end rounding, compensation, compatible numbers in problem-solving contexts	Strategies for estimation & computation	Rounding numbers up to 6-digits
		Round numbers to estimate - addition & subtraction
		Checking calculations when adding & subtracting
		Using compensation to add & subtract
		Round numbers to estimate - multiply & divide
		Checking calculations when multiplying & dividing
3. Apply mental math strategies to determine multiplication and related division facts to 81 (9 x 9)	Multiplication facts to 9 x 9	Multiplication facts for 2
		Multiplication facts for 3
		Multiplication facts for 4
		Multiplication facts for 5
		Multiplication facts for 6
		Multiplication facts for 7
		Multiplication facts for 8
		Multiplication facts for 9
		Multiplying by 1 or 0
		Recalling multiplication facts to 9 x 9
		Relationship between multiplication & division
	Division facts to 81 ÷ 9	Dividing by 2 & 5
		Dividing by 3 & 6
		Dividing by 4 & 8
		Dividing by 9
		Recall multiplication & division facts to 9 x 9

4. Apply mental mathematics strategies for multiplication, such as: annexing then adding zeros, halving and doubling, using the distributive property	Mental strategies to multiply	Multiplying by multiples of 10, 100 & 1000
		Multiplying using doubling
		Multiplying using doubling & halving
		Multiplying using distributive property
5. Demonstrate an understanding of multiplication (1- and 2-digit multipliers and up to 4-digit multiplicands), concretely, pictorially, and symbolically, by: using personal strategies, using the standard algorithm, estimating products to solve problems	Multiply up to 2-digit by up to 4-digits	Multiplying 2-digits by 2-digits, area model
		Multiplying 2-digits by 2-digits, factorising
		Multiplying 2-digits by 2-digits, use known facts
		Multiplying 2-digits by 2-digits, formal algorithm
		Multiplying 3-digits by 1-digit, split method
		Multiplying 3-digits by 1-digit, area model
		Multiplying up to 3-digits, area model
		Multiplying up to 3-digits, commutative property
		Multiplying up to 4-digits by 1-digit, algorithm
		Solving multiplication word problems
6. Demonstrate an understanding of division (1- and 2-digit divisors and up to 4-digit dividends), concretely, pictorially, and symbolically, and interpret remainders by: using personal strategies, using the standard algorithm, estimating quotients to solve problems	Divide up to 4-digits by up to 2-digits	Dividing up to 3-digit by 1-digit, no remainders
		Dividing by partitioning, no remainders
		Dividing 3-digits by 1-digit, factoring
		Finding the remainder, 2-digits by 1-digit
		Dividing by partitioning with remainders
		Dividing 3-digits by 1-digit, algorithm
		Dividing up to 4-digits by 1-digit
7. Demonstrate an understanding of fractions by using concrete and pictorial representations to: create sets of equivalent fractions, compare fractions with like and unlike denominators	Equivalent fractions	Finding equivalent fractions with models
		Finding equivalent fractions using multiplication
		Finding equivalent fractions using a number line
	Compare & order fractions	Comparing unit fractions, different denominators
		Comparing & ordering proper fractions

8. Describe and represent decimals (tenths, hundredths, thousandths) concretely, pictorially, and symbolically	Decimals to thousandths	Understanding decimals to thousandths
		Partitioning decimal numbers to thousandths
9. Relate decimals to fractions (tenths, hundredths, thousandths)	Relate decimals & fractions	Relating decimals & fractions up to thousandths
10. Compare and order decimals (tenths, hundredths, thousandths) by using: benchmarks, place value, equivalent decimals	Compare & order decimals to thousandths	Comparing & ordering decimals to thousandths
11. Demonstrate an understanding of addition and subtraction of decimals (to thousandths), concretely, pictorially, and symbolically, by: using personal strategies, using the standard algorithms, using estimation, solving problems	Add & subtract decimals to thousandths	Adding decimals to thousandths
		Subtracting decimals to thousandths
		Adding & subtracting decimal word problems
		Estimating sums & differences to thousandths

2 Patterns & Relations (Patterns)

2.1 Use patterns to describe the world and solve problems

Outcome	Quests	Content
1. Determine the pattern rule to make predictions about subsequent elements	Represent, analyze & apply patterns	Additive & subtractive number patterns
		Generating add/subtract patterns from a given rule
		Working with repeating number & shape patterns
		Multiplication & division number patterns
		Modelling number patterns from a table of values
		Writing pattern rules as algebraic expressions
		Working with shape patterns & rules

3 Patterns & Relations (Variables & Equations)

3.1 Represent algebraic expressions in multiple ways

Outcome	Quests	Content
2. Solve problems involving single-variable (expressed as symbols or letters), one-step equations with whole-number coefficients, and whole-number solutions	One-step equations with variables	Solving one-step equations using bar model
		Writing one-step equations using variables
		Solving one-step equations & word problems

4 Shape & Space (Measurement)

4.1 Use direct or indirect measurement to solve problems

Outcome	Quests	Content
1. Design and construct different rectangles given either perimeter or area or both (whole numbers), and draw conclusions	Perimeter of rectangles	Introducing perimeter
	Area of rectangles, formula	Finding the area of rectangles, formula
	Relationships between area & perimeter	Solving perimeter & area problems
2. Demonstrate an understanding of measuring length (mm) by: selecting and justifying referents for the unit mm, modelling and describing the relationship between mm and cm units, and between mm and m units	Measure length in millimetres	Introducing millimetres
		Recording length in decimal notation
	Relationship between mm, cm & m	Comparing & ordering lengths in mm & cm
		Converting between mm & cm
		Converting between m & cm
		Selecting appropriate units of length: mm, cm & m
3. Demonstrate an understanding of volume by: selecting and justifying referents for cm3 or m3 units, estimating volume by using referents for cm3 or m3, measuring and recording volume (cm3 or m3), constructing rectangular prisms for a given volume	Measure volume in cubic units	Using unit cubes to measure volume
		Using cubic cm & m to measure volume
		Estimating volume using cubic cm & m
4. Demonstrate an understanding of capacity by: describing the relationship between mL and L, selecting and justifying referents for mL or L units, estimating capacity by using referents for mL or L, measuring and recording capacity (mL or L)	Measure capacity in L & mL	Introducing litres & millilitres
		Using millilitres & litres as references
		Measuring capacity in mL
		Estimating capacity using mL & L
		Selecting units to measure capacity (mL, L)

5 Shape & Space (3-D objects & 2-D shapes)

5.1 Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them

Outcome	Quests	Content
5. Describe and provide examples of edges and faces of 3-D objects, and sides of 2-D shapes, that are: parallel, intersecting, perpendicular, vertical, horizontal	Features of 2-D shapes & 3-D objects	Identifying features on 3-D objects
		Identifying features on 2-D shapes
6. Identify and sort quadrilaterals, including: rectangles, squares, trapezoids, parallelograms, rhombuses according to their attributes	Identify & sort quadrilaterals	Sorting & naming quadrilaterals
		Classifying quadrilaterals

6 Shape & Space (Transformations)

6.1 Describe and analyze position and motion of objects and shapes

Outcome	Quests	Content
8. Identify a single transformation (translation, rotation, or reflection) of 2-D shapes	Single transformations of 2-D shapes	Introducing slides/translations
		Introducing flips/reflections
		Introducing turns/rotations
		One-step translations, reflections & rotations

7 Statistics & Probability (Data Analysis)

7.1 Collect, display, and analyze data to solve problems

Outcome	Quests	Content
2. Construct and interpret double bar graphs to draw conclusions	Double bar graphs	Interpreting data, double bar graphs
		Representing data, double bar graphs

8 Statistics & Probability (Chance & Uncertainty)

8.1 Use experimental or theoretical probabilities to represent and solve problems involving uncertainty

Outcome	Quests	Content
3. Describe the likelihood of a single outcome occurring, using words such as: impossible, possible, certain	Likelihood of single outcomes	Exploring the language of probability
4. Compare the likelihood of two possible outcomes occurring, using words such as: less likely, equally likely, more likely	Likelihood of two possible outcomes	Describing chances of everyday events
		Understanding chance experiments, equal outcomes
		Understanding chance experiments, unequal outcomes
		Understand chance experiments, independent events

Grade 6

1 Number

1.1 Develop number sense

Outcome	Quests	Content
1. Demonstrate an understanding of place value for numbers: greater than one million, less than one-thousandth	Place value to billions	Reading & writing numbers up to billions
		Place value up to billions
	Place value smaller than thousandths	Place value smaller than thousandths
		Solving problems, smaller than one thousandth
2. Solve problems involving large numbers, using technology	Solve problems involving large numbers	Solving problems, larger than one million
3. Demonstrate an understanding of factors and multiples by: determining multiples and factors of numbers less than 100, identifying prime and composite numbers, solving problems involving factors or multiples	Introduce prime & composite numbers	Introducing prime & composite numbers
	Prime factors	Using prime factors
	Find factors & multiples	Finding multiples up to 100, including LCM
		Finding factors up to 100, including GCF
		Solving problems, factors & multiples
4. Relate improper fractions to mixed numbers	Improper fractions & mixed numbers	Comparing & ordering mixed numbers
		Comparing & ordering improper fractions
		Comparing & ordering fractions & mixed numbers
		Converting improper fractions to mixed numbers
		Converting mixed numbers to improper fractions
5. Demonstrate an understanding of ratio, concretely, pictorially, and symbolically	Introduction to ratios	Introducing ratios
		Simplifying ratios
		Dividing a quantity into a given ratio
		Identifying equivalent ratios
6. Demonstrate an understanding of percent (limited to whole numbers), concretely, pictorially, and symbolically	Whole-number percents	Introducing percents
	Percent equivalents	Representing percent & fraction equivalents
		Representing percent & decimal equivalents
		Fraction, decimal & percent equivalents

	Calculate percentage discounts	Calculating percentage discounts
	Calculate percentages of whole numbers	Calculating simple percentages
7. Demonstrate an understanding of integers, concretely, pictorially, and symbolically	Read & represent integers	Investigating integers
		Understanding integers in real-life contexts
		Comparing & ordering integers
8. Demonstrate an understanding of multiplication and division of decimals (involving 1-digit whole-number multipliers, 1-digit natural number divisors, and multipliers and divisors that are multiples of 10), concretely, pictorially, and symbolically, by: using personal strategies, using the standard algorithms, using estimation, solving problems	Multiply decimals to thousandths	Multiplying decimals & whole numbers
		Multiplying decimals & whole numbers, base 10
	Divide decimals to thousandths	Dividing decimals & whole numbers, base 10
		Dividing decimals & whole numbers
9. Explain and apply the order of operations, excluding exponents (limited to whole numbers)	Order of operations with whole numbers	Order of operations, addition & subtraction
		Order of operations, multiplication & division
		Order of operations, 4 operations
		Order of operations, grouping symbols
		Solving problems, order of operations

2 Patterns & Relations (Patterns)

2.1 Use patterns to describe the world and solve problems

Outcome	Quests	Content
1. Demonstrate an understanding of the relationships within tables of values to solve problems	Relationships within tables	Determining missing values in a table of values
		Making predictions about linear growing patterns
2. Represent and describe patterns and relationships using graphs and tables	Patterns in tables of values & graphs	Creating a table of values, visual pattern
		Representing linear patterns, tables & graphs

3 Patterns & Relations (Variables and Equations)

3.1 Represent algebraic expressions in multiple ways

Outcome	Quests	Content
3. Represent generalizations arising from number relationships using equations with letter variables	Patterns, expressions & equations	Writing an equation to represent a table of values
		Writing expressions, rule for a pattern
	Understand variables	Matching equations & word problems
		Writing & solving equations given a problem
4. Demonstrate and explain the meaning of preservation of equality, concretely, pictorially, and symbolically	Preservation of equality	Solving 1-step equations
		Solving 1-step equations using a balance
		Solving 1-step equations using algebra tiles
		Understanding the preservation of equality
		Creating equivalent forms of an equation

4 Shape & Space (Measurement)

4.1 Use direct or indirect measurement to solve problems

Outcome	Quests	Content
1. Demonstrate an understanding of angles by: identifying examples of angles in the environment, classifying angles according to their measure, estimating the measure of angles using 45°, 90°, and 180° as reference angles, determining angle measures in degrees, drawing and labelling angles when the measure is specified	Angle measurement & classification	Classifying angles
	Angles up to 360°	Measuring angles with a circular protractor
2. Demonstrate that the sum of interior angles is: 180° in a triangle, 360° in a quadrilateral	Sum of interior angles	Finding the missing angle of a triangle
		Finding the missing angle of a quadrilateral
3. Develop and apply a formula for determining the: perimeter of polygons, area of rectangles, volume of right rectangular prisms	Relationships between area & perimeter	Solving perimeter & area problems
	Volume of rectangular prisms	Finding the volume of rectangular prisms
		Finding the missing dimension, rectangular prisms
	Area of rectangles	Finding the area of rectangles
	Perimeter of polygons	Determining the perimeter of polygons

5 Shape & Space (3-D Objects & 2-D Shapes)

5.1 Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them

Outcome	Quests	Content
4. Construct and compare triangles, including: scalene, isosceles, equilateral, right, obtuse, acute in different orientations	Classification of triangles	Classifying triangles by their sides & angles
5. Describe and compare the sides and angles of regular and irregular polygons	Regular & irregular polygons	Understanding regular & irregular polygons

6 Shape & Space (Transformations)

6.1 Describe and analyze position and motion of objects and shapes

Outcome	Quests	Content
6. Perform a combination of transformations (translations, rotations, or reflections) on a single 2-D shape, and draw and describe the image	Combinations of transformations	Identifying combinations of transformations
7. Perform a combination of successive transformations of 2-D shapes to create a design, and identify and describe the transformations	Recognize tessellations	Recognizing tessellations
8. Identify and plot points in the first quadrant of a Cartesian plane using whole-number ordered pairs	The Cartesian plane, first quadrant	Plotting points in the first quadrant
		Plotting points that create a shape
9. Perform and describe single transformations of a 2-D shape in the first quadrant of a Cartesian plane (limited to whole-number vertices)	Transformations in the first quadrant	Investigating translations in the first quadrant
		Identifying reflections in the first quadrant
		Identifying rotations in the first quadrant

7 Statistics & Probability (Data Analysis)

7.1 Collect, display, and analyze data to solve problems

Outcome	Quests	Content
1. Create, label, and interpret line graphs to draw conclusions	Construct line graphs	Constructing a line graph
		Interpreting data in a line graph
		Choosing graphs, continuous vs discrete data
2. Select, justify, and use appropriate methods of collecting data, including: questionnaires, experiments, databases, electronic media	Data collection	Data collection: questionnaires
3. Graph collected data and analyze the graph to solve problems	Select data displays	Selecting data displays

8 Statistics & Probability (Chance & Uncertainty)

8.1 Use experimental or theoretical probabilities to represent and solve problems involving uncertainty

Outcome	Quests	Content
4. Demonstrate an understanding of probability by: identifying all possible outcomes of a probability experiment, differentiating between experimental and theoretical probability, determining the theoretical probability of outcomes in a probability experiment, determining the experimental probability of outcomes in a probability experiment, comparing experimental results with the theoretical probability for an experiment	Theoretical & experimental probability	Comparing observed & expected frequencies
		Probability of 0 & 1
		Predicting the probability of a specific outcome
		Listing the sample space for an event

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