Leaps AND Bounds TOWARD Math Understanding

Correlation to Ontario Curriculum and Grade 8 Classroom Resources

Note: Leaps and Bounds 7/8 *is a math intervention resource and therefore does not include new content and concepts being introduced to students for the first time in Grade 8.* Leaps and Bounds 7/8 *includes content from Grades 5 to 7 that will prepare students who are struggling for work at the Grade 7 or 8 level.*

GRADE 8 Core Resources Correlation with Grade 8 Ontario core resources			**INTERVENTION Resources and Expectations** Correlation between *Leaps and Bounds 7/8* and prerequisite expectations from Ontario Grades 5 to 7			
Grade 8 Ontario expectations	***Nelson Mathematics 8***	***Math Makes Sense 8***	***Leaps and Bounds 7/8* Topics**	**Grade 7 Ontario expectations**	**Grade 6 Ontario expectations**	**Grade 5 Ontario expectations**
Number Sense and Numeration: Quantity Relationships						
			Representing Large Whole Numbers *Pathway 1*: Using Decimals for Large Whole Numbers (optional) *Pathway 2*: Representing Millions and Billions (optional) *Pathway 3*: Representing Six-Digit Numbers		– read and print in words whole numbers to one hundred thousand, using meaningful contexts – solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 1 000 000	– represent, compare, and order whole numbers and decimal numbers from 0.01 to 100 000, using a variety of tools – demonstrate an understanding of place value in whole numbers and decimal numbers from 0.01 to 100 000, using a variety of tools and strategies – read and print in words whole numbers to ten thousand, using meaningful contexts – solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 100 000
– express repeated multiplication using exponential notation	1.4	1.2	**Multiplicative Relationships** *Pathway 2:* Prime Numbers and Perfect Squares	– represent perfect squares and square roots, using a variety of tools		
				– explain the relationship between exponential notation and the measurement of area and volume		

Grade 8 Ontario expectations	***Nelson Mathematics 8***	***Math Makes Sense 8***	***Leaps and Bounds 7/8* Topics**	**Grade 7 Ontario expectations**	**Grade 6 Ontario expectations**	**Grade 5 Ontario expectations**
– represent whole numbers in expanded form using powers of ten	1.5, Chapter 1 Task	1.3				
– represent, compare, and order rational numbers (i.e., positive and negative fractions and decimals to thousandths)	2.1, Chapter 2 Curious Math, 2.6 Chapter 9 Mental Imagery, 9.4	4.8 9.5A (TG lesson)	**Representing and Comparing Decimals** *Pathway 1:* Decimals with Many Places *Pathway 2:* Comparing Decimals *Pathway 3:* Representing Decimal Thousandths *Pathway 4*: Multiplying and Dividing by 10s **Comparing Fractions** *Pathway 1:* Fractions and Mixed Numbers *Pathway 2:* Proper Fractions *Pathway 3:* Equivalent Fractions	– represent, compare, and order decimals to hundredths and fractions, using a variety of tools	– represent, compare, and order whole numbers and decimal numbers from 0.001 to 1 000 000, using a variety of tools – demonstrate an understanding of place value in whole numbers and decimal numbers from 0.001 to 1 000 000, using a variety of tools and strategies – represent, compare, and order fractional amounts with unlike denominators, including proper and improper fractions and mixed numbers, using a variety of tools and using standard fractional notation	– represent, compare, and order whole numbers and decimal numbers from 0.01 to 100 000, using a variety of tools – demonstrate an understanding of place value in whole numbers and decimal numbers from 0.01 to 100 000, using a variety of tools and strategies – round decimal numbers to the nearest tenth, in problems arising from real-life situations – represent, compare, and order fractional amounts with like denominators, including proper and improper fractions and mixed numbers, using a variety of tools and using standard fractional notation – demonstrate and explain the concept of equivalent fractions, using concrete materials – demonstrate and explain equivalent representations of a decimal number, using concrete materials and drawings – read and write money amounts to $1000 – count forward by hundredths from any decimal number expressed to two decimal places, using concrete materials and number lines – multiply decimal numbers by 10, 100, 1000, and 10 000, and divide decimal numbers by 10 and 100, using mental strategies – determine and explain, through investigation using concrete materials, drawings, and calculators, the relationship between fractions (i.e., with denominators of 2, 4, 5, 10, 20, 25, 50, and 100) and their equivalent decimal forms

Grade 8 Ontario expectations	*Nelson Mathematics 8*	*Math Makes Sense 8*	*Leaps and Bounds 7/8* Topics	Grade 7 Ontario expectations	Grade 6 Ontario expectations	Grade 5 Ontario expectations
– translate between equivalent forms of a number (i.e., decimals, fractions, percents)	2.1, 2.4, Chapter 2 Mental Math, Chapter 2 Math Games, 2.7	Unit 2 Skills You'll Need, 2.1, 2.3, 2.4 4.9	**Rates, Percents, and Ratios** *Pathway 2:* Using Percents *Pathway 3:* Using Ratios	– select and justify the most appropriate representation of a quantity (i.e., fraction, decimal, percent) for a given context		
– determine common factors and common multiples using the prime factorization of numbers	1.1, 1.2, 1.3, Chapter 1 Math Game, Chapter 1 Task	1.2	**Multiplicative Relationships** *Pathway 2:* Prime Numbers and Perfect Squares *Pathway 3:* Factors and Multiples	– generate multiples and factors, using a variety of tools and strategies	– identify composite numbers and prime numbers, and explain the relationship between them	
Number Sense and Numeration: Operational Sense						
			Whole Number Operations *Pathway 1*: Order of Operations	– evaluate expressions that involve whole numbers and decimals, including expressions that contain brackets, using order of operations	– explain the need for a standard order for performing operations, by investigating the impact that changing the order has when performing a series of operations	
			Whole Number Operations *Pathway 2*: Dividing Whole Numbers *Pathway 3*: Multiplying Whole Numbers		– use a variety of mental strategies to solve addition, subtraction, multiplication, and division problems involving whole numbers – solve problems involving the multiplication and division of whole numbers (four-digit by two-digit), using a variety of tools and strategies	– solve problems involving the addition, subtraction, and multiplication of whole numbers, using a variety of mental strategies – multiply two-digit whole numbers by two-digit whole numbers, using estimation, student-generated algorithms, and standard algorithms – divide three-digit whole numbers by one-digit whole numbers, using concrete materials, estimation, student-generated algorithms, and standard algorithms

Grade 8 Ontario expectations	***Nelson Mathematics 8***	***Math Makes Sense 8***	***Leaps and Bounds 7/8* Topics**	**Grade 7 Ontario expectations**	**Grade 6 Ontario expectations**	**Grade 5 Ontario expectations**
– solve multi-step problems arising from real-life contexts and involving whole numbers and decimals, using a variety of tools and strategies	2.1, 2.2, 2.3, 2.4, 2.8, 2.9 Chapter 4 Curious Math 5.5 Chapter 12 Math Game	1.1 Unit 2 3.4, 3.5 8.4, 8.5	**Decimal Operations** *Pathway 1:* Dividing Whole Numbers by Decimals *Pathway 2:* Dividing Decimals by Whole Numbers *Pathway 3:* Multiplying with Decimals *Pathway 4*: Adding and Subtracting Decimals **Relating Situations to Operations** *Pathway 1:* Recognizing Division Situations *Pathway 2:* Recognizing Multiplication Situations *Pathway 3:* Recognizing Subtraction Situations	– use a variety of mental strategies to solve problems involving the addition and subtraction of fractions and decimals – solve problems involving the multiplication and division of decimal numbers to thousandths by one-digit whole numbers, using a variety of tools – solve multi-step problems arising from real-life contexts and involving whole numbers and decimals, using a variety of tools – use estimation when solving problems involving operations with whole numbers, decimals, and percents, to help judge the reasonableness of a solution	– add and subtract decimal numbers to thousandths, using concrete materials, estimation, algorithms, and calculators – multiply and divide decimal numbers to tenths by whole numbers, using concrete materials, estimation, algorithms, and calculators – use estimation when solving problems involving the addition and subtraction of whole numbers and decimals, to help judge the reasonableness of a solution	– add and subtract decimal numbers to hundredths, including money amounts, using concrete materials, estimation, and algorithms – describe multiplicative relationships between quantities by using simple fractions and decimals
– solve problems involving percents expressed to one decimal place and whole-number percents greater than 100	2.7, 2.8 Chapter 5 Mental Imagery	2.4, 2.5	**Rates, Percents, and Ratios** *Pathway 2:* Using Percents *Pathway 3:* Using Ratios	– determine, through investigation, the relationships among fractions, decimals, percents and ratios – solve problems that involve determining whole number percents, using a variety of tools	– estimate quantities using benchmarks of 10%, 25%, 50%, 75%, and 100% – determine and explain, through investigation using concrete materials, drawings, and calculators, the relationships among fractions (i.e., with denominators of 2, 4, 5, 10, 20, 25, 50, and 100), decimal numbers, and percents	
– use estimation when solving problems involving operations with whole numbers, decimals, percents, integers, and fractions, to help judge the	1.6, 1.8, 1.9 2.2, 2.7 Chapter 5 Math Game 6.2, Chapter 6 Mental Math 8.4 Chapter 12 Mental Math	1.1 2.4 4.3	**Whole Number Operations** *Pathway 1*: Order of Operations *Pathway 2*: Dividing Whole Numbers *Pathway 3*: Multiplying Whole Numbers **Decimal Operations** *Pathway 1:* Dividing Whole Numbers by Decimals	– use a variety of mental strategies to solve problems involving the addition and subtraction of fractions and decimals – use estimation when solving problems involving operations with whole numbers, decimals, and percents, to help judge the reasonableness of a solution – select and justify the most	– use estimation when solving problems involving the addition and subtraction of whole numbers and decimals, to help judge the reasonableness of a solution	– use estimation when solving problems involving the addition, subtraction, multiplication, and division of whole numbers, to help judge the reasonableness of a solution

Grade 8 Ontario expectations	*Nelson Mathematics 8*	*Math Makes Sense 8*	*Leaps and Bounds 7/8* Topics	Grade 7 Ontario expectations	Grade 6 Ontario expectations	Grade 5 Ontario expectations
reasonableness of a solution			*Pathway 2:* Dividing Decimals by Whole Numbers *Pathway 3:* Multiplying with Decimals Pathway 4: Adding and Subtracting Decimals **Fraction Operations** *Pathway 1:* Repeated Addition of Fractions *Pathway 2:* Adding and Subtracting Mixed Numbers *Pathway 3:* Subtracting Fractions Pathway 4: Adding Fractions	appropriate representation of a quantity (i.e., fraction, decimal, percent) for a given context		
– represent the multiplication and division of fractions, using a variety of tools and strategies – solve problems involving addition, subtraction, multiplication, and division with simple fractions	9.1, 9.3, 9.4, 9.5, 9.6, 9.7, Chapter 9 Curious Math, 9.8, 9.9, Chapter 9 Task	4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7	**Fraction Operations** *Pathway 1:* Repeated Addition of Fractions *Pathway 2:* Adding and Subtracting Mixed Numbers *Pathway 3:* Subtracting Fractions Pathway 4: Adding Fractions	– use a variety of mental strategies to solve problems involving the addition and subtraction of fractions and decimals – add and subtract fractions with simple like and unlike denominators, using a variety of tools – demonstrate, using concrete materials, the relationship between the repeated addition of fractions and the multiplication of that fraction by a whole number		
– represent the multiplication and division of integers, using a variety of tools – solve problems involving operations with integers, using a variety of tools – evaluate expressions that involve integers, including expressions that contain brackets and exponents, using order of operations	6.3, 6.4, 6.5, 6.6, 6.7	9.1, 9.2, 9.3, 9.4, 9.5, 9.6	**Integers** *Pathway 1*: Subtracting Integers *Pathway 2*: Adding Integers *Pathway 3*: Representing and Comparing Integers **Whole Number Operations** *Pathway 1*: Order of Operations	– evaluate expressions that involve whole numbers and decimals, including expressions that contain brackets, using order of operations – identify and compare integers found in real-life contexts – represent and order integers, using a variety of tools – add and subtract integers, using a variety of tools	– explain the need for a standard order for performing operations, by investigating the impact that changing the order has when performing a series of operations	

Grade 8 Ontario expectations	*Nelson Mathematics 8*	*Math Makes Sense 8*	*Leaps and Bounds 7/8* Topics	Grade 7 Ontario expectations	Grade 6 Ontario expectations	Grade 5 Ontario expectations
– multiply and divide decimal numbers by various powers of ten	Chapter 1 Mental Math 2.2	1.3 with supporting TG note, Unit 3 Skills You'll Need	**Representing and Comparing Decimals** *Pathway 1:* Decimals with Many Places *Pathway 2:* Comparing Decimals *Pathway 3:* Representing Decimal Thousandths *Pathway 4*: Multiplying and Dividing by 10s **Decimal Operations** *Pathway 1*: Dividing Whole Numbers by Decimals *Pathway 2*: Dividing Decimals by Whole Numbers	– divide whole numbers by simple fractions and by decimal numbers to hundredths, using concrete materials	– multiply whole numbers by 0.1, 0.01, and 0.001 using mental strategies – multiply and divide decimal numbers by 10, 100, 1000, and 10 000 using mental strategies	– multiply decimal numbers by 10, 100, 1000, and 10 000, and divide decimal numbers by 10 and 100, using mental strategies
– estimate, and verify using a calculator, the positive square roots of whole numbers, and distinguish between whole numbers that have whole-number square roots (i.e., perfect square numbers) and those that do not	Chapter 1 Curious Math, 1.6, 1.7, Chapter 10 Mental Math	8.1, 8.2, Technology Feature, page 334	**Multiplicative Relationships** *Pathway 2:* Prime Numbers and Perfect Squares	– represent perfect squares and square roots, using a variety of tools		
Number Sense and Numeration: Proportional Relationships						
– identify and describe real-life situations involving two quantities that are directly proportional – solve problems involving proportions, using concrete materials, drawings, and variables – solve problems involving percent that	2.4, 2.5, 2.7, 2.8, 2.9, Chapter 2 Task Chapter 3 Curious Math, Chapter 3 Cross-Strand Investigation 5.3	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 6.2	**Rates, Percents, and Ratios** *Pathway 1:* Using Rates *Pathway 2:* Using Percents *Pathway 3:* Using Ratios	– determine, through investigation, the relationships among fractions, decimals, percents and ratios – solve problems that involve determining whole number percents, using a variety of tools – demonstrate an understanding of rate as a comparison, or ratio, of two measurements with different units – solve problems involving the calculation of unit rate	– estimate quantities using benchmarks of 10%, 25%, 50%, 75%, and 100% – represent ratios found in real-life contexts, using concrete materials, drawings, and standard fractional notation – determine and explain, through investigation using concrete materials,	– demonstrate an understanding of simple multiplicative relationships involving whole-number rates, through investigation using concrete materials and drawings

arise from real-life contexts – solve problems involving rates					drawings, and calculators, the relationships among fractions (i.e., with denominators of 2, 4, 5, 10, 20, 25, 50, and 100), decimal numbers, and percents – represent relationships using unit rates	
Measurement: Attributes, Units, and Measurement Sense						
– research, describe, and report on applications of volume and capacity measurement	11.3, Chapter 11 Task	Unit 3 Problem	**Area and Perimeter** *Pathway 3*: Area of Composite Shapes *Pathway 4*: Area of Parallelograms and Triangles *Pathway 5*: Area and Perimeter of Rectangles	– research and report on real-life applications of area measurements	– estimate, measure, and record length, area, mass, capacity, and volume, using the metric measurement system	– estimate and measure the perimeter and area of regular and irregular polygons, using a variety of tools and strategies
						– estimate, measure (i.e., using an analogue clock), and represent time intervals to the nearest second – estimate and determine elapsed time, with and without using a time line, given the durations of events expressed in minutes, hours, days, weeks, months, or years – solve problems involving the relationship between a 12-hour clock and a 24-hour clock
						– measure and record temperatures to determine and represent temperature changes over time
Measurement: Measurement Relationships						
– solve problems that require conversions involving metric units of area, volume, and capacity (i.e., square centimetres and square metres; cubic centimetres and	11.3	3.4, 3.5 6.2, 6.3, 6.4, 6.5	**Area and Perimeter** *Pathway 3:* Area of Composite Shapes Pathway 4: Area of Parallelograms and Triangles Pathway 5: Area and Perimeter of Rectangles **Volume and Surface Area** *Pathway 1:* Volume of Prisms: Using a Formula *Pathway 2:* Surface Area of	– solve problems that involve the surface area and volume of right prisms and that require conversion between metric measures of capacity and volume – solve problems that require conversion between metric units of measure – solve problems that	– select and justify the appropriate metric unit (i.e., millimetre, centimetre, decimetre, metre, decametre, kilometre) to measure length or distance in a given real-life situation – solve problems requiring conversion from larger to smaller metric units – determine, using concrete materials, the relationship between units used to measure area (i.e., square centimetre, square metre),	– select and justify the most appropriate standard unit (i.e., millimetre, centimetre, decimetre, metre, kilometre) to measure length, height, width, and distance, and to measure the perimeter of various polygons – solve problems requiring conversion from metres to centimetres and from kilometres to metres – create, through investigation

cubic metres; millilitres and cubic centimetres)			Prisms *Pathway 3:* Volume of Rectangular Prisms **Metric Units** *Pathway 1:* Renaming Units *Pathway 2:* Selecting a Unit	require conversion between metric units of area – determine, through investigation using a variety of tools and strategies, the relationship for calculating the area of a trapezoid, and generalize to develop the formula (i.e., *Area* = (*sum of lengths of parallel sides* × *height*) ÷ 2) – solve problems involving the estimation and calculation of the area of a trapezoid – estimate and calculate the area of composite two-dimensional shapes by decomposing into shapes with known area relationships	and apply the relationship to solve problems that involve conversions from square metres to square centimetres – solve problems requiring conversion from larger to smaller using decimals – determine, through investigation using a variety of tools and strategies, the relationship between the area of a rectangle and the areas of parallelograms and triangles, by decomposing and composing – develop the formulas for the area of a parallelogram (i.e., *Area of parallelogram* = *base* × *height*) and the area of a triangle [i.e., *Area of triangle* = (*base* × *height*) ÷ 2], using the area relationships among rectangles, parallelograms, and triangles – solve problems involving the estimation and calculation of the areas of triangles and the areas of parallelograms – construct a rectangle, a square, a triangle, and a parallelogram, using a variety of tools, given the area and/or perimeter	using a variety of tools and strategies, two-dimensional shapes with the same perimeter or the same area – determine, through investigation using a variety of tools and strategies, the relationships between the length and width of a rectangle and its area and perimeter, and generalize to develop the formulas [i.e., *Area = length* × *width*; *Perimeter = (2* × *length) + (2* × *width)*] – solve problems requiring the estimation and calculation of perimeters and areas of rectangles
– measure the circumference, radius, and diameter of circular objects, using concrete materials – determine, through investigation using a variety of tools and strategies, the relationships for calculating the circumference and the area of a circle, and generalize to develop the formulas [i.e., Circumference of a circle = $\pi \times$ diameter; Area of a circle = $\pi \times (\text{radius})^2$] – solve problems involving the estimation and calculation of the circumference and the area of a circle	5.1, 5.2, 5.3, 5.4, 5.5, Chapter 5 Task	6.1, 6.2, 6.3	**Area and Perimeter** *Pathway 1:* Area of Circles *Pathway 2:* Circumference of Circles			

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– determine, through investigation using a variety of tools and strategies, the relationship between the area of the base and height and the volume of a cylinder, and generalize to develop the formula (i.e., Volume = area of base × height) – determine, through investigation using concrete materials, the surface area of a cylinder – solve problems involving the surface area and the volume of cylinders, using a variety of strategies	11.1, 11.2, 11.3, 11.4, Chapter 11 Task	6.4, 6.5, Practice Test	**3-D Shapes** *Pathway 1:* Using Isometric Drawings *Pathway 2:* Using Different Views *Pathway 3:* Using Nets **Volume and Surface Area** *Pathway 1:* Volume of Prisms: Using a Formula *Pathway 2:* Surface Area of Prisms *Pathway 3:* Volume of Rectangular Prisms	– sketch different polygonal prisms that share the same volume – determine, through investigation using a variety of tools, the surface area of right prisms – determine, through investigation using a variety of tools and strategies the relationship between the height, the area of the base, and the volume of right prisms with simple polygonal bases , and generalize to develop the formula (i.e., Volume = area of base × height) – determine, through investigation using a variety of tools the surface area of right prisms – solve problems that involve the surface area and volume of right prisms and that require conversion between metric measures of capacity and volume	– determine, through investigation using a variety of tools and strategies, the surface area of rectangular and triangular prisms – determine, through investigation using a variety of tools and strategies, the relationship between the height, the area of the base, and the volume of a triangular prism, and generalize to develop the formula – determine, through investigation using a variety of tools and strategies, the surface area of rectangular and triangular prisms – solve problems involving the estimation and calculation of the surface area and volume of triangular and rectangular prisms	– determine, through investigation using stacked congruent rectangular layers of concrete materials, the relationship between the height, the area of the base, and the volume of a rectangular prism, and generalize to develop the formula (i.e., Volume = area of base × height)
			See *Leaps and Bounds 5/6*			– determine, through investigation, the relationship between capacity (i.e., the amount a container can hold) and volume (i.e., the amount of space taken up by an object), by comparing the volume of an object with the amount of liquid it can contain or displace

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			See *Leaps and Bounds 5/6*			– select and justify the most appropriate standard unit to measure mass (i.e., milligram, gram, kilogram, tonne)
Geometry and Spatial Sense: Geometric Properties						
– sort and classify quadrilaterals by geometric properties, including those based on diagonals, through investigation using a variety of tools	10.4	7.6A (TG lesson)	**2-D Shapes** *Pathway 1*: Similar Shapes *Pathway 2*: Congruent Shapes *Pathway 3*: Sorting and Classifying Polygons	– sort and classify triangles and quadrilaterals by geometric properties related to symmetry, angles, and sides, through investigation using a variety of tools and strategies	– sort and classify quadrilaterals by geometric properties related to symmetry, angles, and sides, through investigation using a variety of tools and strategies – sort polygons according to the number of lines of symmetry and the order of rotational symmetry, through investigation using a variety of tools	– distinguish among polygons, regular polygons, and other two-dimensional shapes – identify triangles (i.e., acute, right, obtuse, scalene, isosceles, equilateral), and classify them according to angle and side properties
– construct a circle, given its centre and radius, or its centre and a point on the circle, or three points on the circle	5.1, 5.2 10.1	6.1 7.4	**Geometric Drawings** *Pathway 1*: Bisecting Angles and Line Segments *Pathway 2*: Drawing Lines and Polygons *Pathway 3*: Drawing Circles (Gr.8 ON) *Pathway 4*: Drawing Triangles	– construct related lines (i.e., parallel; perpendicular; intersecting at 30^o, 45^o, and 60^o), using angle properties and a variety of tools and strategies – construct angle bisectors and perpendicular bisectors, using a variety of tools and strategies, and represent equal angles and equal lengths using mathematical notation	– construct polygons using a variety of tools, given angle and side measurements,	– construct triangles, using a variety of tools, given acute or right angles and side measurements
– investigate and describe applications of geometric properties in the real world	5.2, 5.3, 5.4, 5.5, 5.6, Chapter 5 Math in Action 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, Chapter 10 Task, Chapter 10 Math in Action	6.1 7.1, 7.2, 7.3, 7.4				

Grade 8 Ontario expectations	*Nelson Mathematics 8*	*Math Makes Sense 8*	*Leaps and Bounds 7/8* Topics	Grade 7 Ontario expectations	Grade 6 Ontario expectations	Grade 5 Ontario expectations
Geometry and Spatial Sense: Geometric Relationships						
– determine, through investigation using a variety of tools, relationships among area, perimeter, corresponding side lengths, and corresponding angles of similar shapes	7.4	Unit 2 Technology Feature, page 61	**2-D Shapes** *Pathway 1*: Similar Shapes *Pathway 2*: Congruent Shapes *Pathway 3*: Sorting and Classifying Polygons	– sort and classify triangles and quadrilaterals by geometric properties related to symmetry, angles, and sides, through investigation using a variety of tools and strategies – demonstrate an understanding that enlarging or reducing two-dimensional shapes creates similar shapes – distinguish between and compare similar shapes and congruent shapes, using a variety of tools and strategies	– sort and classify quadrilaterals by geometric properties related to symmetry, angles, and sides, through investigation using a variety of tools and strategies	– distinguish among polygons, regular polygons, and other two-dimensional shapes – identify triangles (i.e., acute, right, obtuse, scalene, isosceles, equilateral), and classify them according to angle and side properties
– determine, through investigation using a variety of tools and strategies, the angle relationships for intersecting lines and for parallel lines and transversals, and the sum of the angles of a triangle	10.2, 10.3	7.2, 7.3, Unit 7 Technology Features, pages 276, 283, 290	**Angles** *Pathway 1:* Sums of Angle Measures in Polygons *Pathway 2:* Drawing Angles *Pathway 3:* Measuring Angles	– investigate, using concrete materials, the angles between the faces of a prism, and identify right prisms	– measure and construct angles up to 180° using a protractor, and classify them as acute, right, obtuse, or straight angles	– identify and classify acute, right, obtuse, and straight angles; – measure and construct angles up to 90º, using a protractor
– solve angle-relationship problems involving triangles, intersecting lines, and parallel lines and transversals	10.2, Chapter 10 Math in Action	7.1, 7.2, 7.3, 7.6				
– determine the Pythagorean relationship, through investigation using a variety of tools and strategies	Chapter 10 Curious Math, 10.6	8.3, Unit 8 Technology Feature, page 342				
– solve problems involving right triangles geometrically, using the Pythagorean relationship	10.6, Chapter 10 Math Game, Chapter 10 Task, Chapter 10 Math in Action	8.4, 8.5				

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			2-D Shapes *Pathway 2*: Congruent Shapes	– identify, through investigation, the minimum side and angle information (i.e., side-side-side; side-angle-side; angle-side-angle) needed to describe a unique triangle – determine, through investigation using a variety of tools, relationships among area, perimeter, corresponding side lengths, and corresponding angles of congruent shapes		
– determine, through investigation using concrete materials, the relationship between the numbers of faces, edges, and vertices of a polyhedron (i.e., number of faces + number of vertices = number of edges + 2)	11.5, 11.6	3.1	**3-D Shapes** *Pathway 1:* Using Isometric Drawings *Pathway 2:* Using Different Views *Pathway 3:* Using Nets		– build three-dimensional models using connecting cubes, given isometric sketches or different views (i.e., top, side, front) of the structure – sketch, using a variety of tools, isometric perspectives and different views (i.e., top, side, front) of three-dimensional figures built with interlocking cubes	– identify prisms and pyramids from their nets; – construct nets of prisms and pyramids, using a variety of tools
Geometry and Spatial Sense: Location and Movement						
			Location *Pathway 1:* Plotting Points in 4 Quadrants *Pathway 2:* Plotting Points on a Grid	– plot points using all four quadrants of the Cartesian coordinate grid	– explain how a coordinate system represents location, and plot points in the first quadrant of a Cartesian coordinate grid	– locate an object using the cardinal directions (i.e., north, south, east, west) and a coordinate system – compare grid systems commonly used on maps (i.e., the use of numbers and letters to identify an area; the use of a coordinate system based on the cardinal directions to describe a specific location)

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– graph the image of a point, or set of points, on the Cartesian coordinate plane after applying a transformation to the original point(s) (i.e., translation; reflection in the *x*-axis, the *y*-axis, or the angle bisector of the axes that passes through the first and third quadrants; rotation of 90°, 180°, or 270°about the origin) – identify, through investigation, real-world movements that are translations, reflections, and rotations	7.1, 7.2, 7.3, Chapter 7 Task	9.8, 9.9	**Transformations** *Pathway 1:* Using Transformations in Design *Pathway 2:* Performing Dilatations *Pathway 3:* Combining Transformations Pathway 4: Performing Single Transformations	– identify, perform, and describe dilatations (i.e., enlargements and reductions), through investigation using a variety of tools – create and analyse designs involving translations, reflections, dilatations, and/or simple rotations of two-dimensional shapes, using a variety of tools – determine, through investigation using a variety of tools, polygons or combinations of polygons that tile a plane, and describe the transformation(s) involved.	– identify, perform, and describe, through investigation using a variety of tools, rotations of 180º and clockwise and counterclockwise rotations of 90°, with the centre of rotation inside or outside the shape – create and analyse designs made by reflecting, translating, and/or rotating a shape, or shapes, by 90º or 180º – extend and create repeating patterns that result from rotations, through investigation using a variety of tools	– identify, perform, and describe translations, using a variety of tools – create and analyse designs by translating and/or reflecting a shape, or shapes, using a variety of tools – extend and create repeating patterns that result from translations, through investigation using a variety of tools
Patterning and Algebra: Patterns and Relationships						
– represent, through investigation with concrete materials, the general term of a linear pattern, using one or more algebraic expressions – represent linear patterns graphically (i.e., make a table of values that shows the term number and the term, and plot the coordinates on a graph), using a variety of tools – determine a term, given its term number, in a linear pattern that is represented by a graph or an algebraic equation	4.3, 4.5, Chapter 4 Task	10.2, 10.3	**Patterns** *Pathway 1:* Linear Relations *Pathway 2:* Representing Patterns *Pathway 3:* Exploring Simple Patterns	– represent linear growing patterns, using a variety of tools and strategies – make predictions about linear growing patterns, through investigation with concrete materials – develop and represent the general term of a linear growing pattern, using algebraic expressions involving one operation – compare pattern rules that generate a pattern by adding or subtracting a constant, or multiplying or dividing by a constant, to get the next term with pattern rules that use the term number to describe the	– identify geometric patterns, through investigation using concrete materials or drawings, and represent them numerically – make tables of values for growing patterns, given pattern rules in words, then list the ordered pairs (with the first coordinate representing the term number and the second coordinate representing the term) and plot the points in the first quadrant, using a variety of tools – determine the term number of a given term in a growing pattern that is represented by a pattern rule in words, a table of values, or a graph	– create, identify, and extend numeric and geometric patterns, using a variety of tools – build a model to represent a number pattern presented in a table of values that shows the term number and the term – make a table of values for a pattern that is generated by adding or subtracting a number (i.e., a constant) to get the next term, or by multiplying or dividing by a constant to get the next term, given either

				general term – make connections between evaluating algebraic expressions and determining the term in a pattern using the general term	– describe pattern rules (in words) that generate patterns by adding or subtracting a constant, or multiplying or dividing by a constant, to get the next term, then distinguish such pattern rules from pattern rules, given in words, that describe the general term by referring to the term number – determine a term, given its term number, by extending growing and shrinking patterns that are generated by adding or subtracting a constant, or multiplying or dividing by a constant, to get the next term	the sequence or the pattern rule in words – make predictions related to growing and shrinking geometric and numeric patterns
Patterning and Algebra: Variables, Expressions, and Equations						
– describe different ways in which algebra can be used in real-life situations	8.2	2.1, 2.7 Unit 3 Skills You'll Need, 3.4, 3.5 6.2, 6.3, 6.4, 6.5 8.4	**Algebra** *Pathway 1:* Solving Problems Using Equations *Pathway 2:* Solving Simple Equations *Pathway 3:* Using Variables	– model real-life relationships involving constant rates where the initial condition starts at 0 – model real-life relationships involving constant rates, using algebraic equations with variables to represent the changing quantities in the relationship	– demonstrate an understanding of different ways in which variables are used	– demonstrate, through investigation, an understanding of variables as changing quantities, given equations with letters or other symbols that describe relationships involving simple rates – demonstrate, through investigation, an understanding of variables as unknown quantities represented by a letter or other symbol
– model linear relationships using tables of values, graphs, and equations, through investigation using a variety of tools	8.1	Unit 2 Skills You'll Need 6.2 10.2, 10.3	**Algebra** *Pathway 1:* Solving Problems Using Equations *Pathway 2:* Solving Simple Equations *Pathway 3:* Using Variables	– model real-life relationships involving constant rates where the initial condition starts at 0 – model real-life relationships involving constant rates, using algebraic equations with variables to represent the changing quantities in the relationship	– demonstrate an understanding of different ways in which variables are used – identify, through investigation, the quantities in an equation that vary and those that remain constant	– demonstrate, through investigation, an understanding of variables as changing quantities, given equations with letters or other symbols that describe relationships involving simple rates

Grade 8 Ontario expectations	*Nelson Mathematics 8*	*Math Makes Sense 8*	*Leaps and Bounds 7/8* Topics	Grade 7 Ontario expectations	Grade 6 Ontario expectations	Grade 5 Ontario expectations
– translate statements describing mathematical relationships into algebraic expressions and equations	4.1, 4.2 8.1, 8.2, 8.3	Unit 10 Skills You'll Need	**Algebra** *Pathway 1:* Solving Problems Using Equations *Pathway 2:* Solving Simple Equations *Pathway 3:* Using Variables	– translate phrases describing simple mathematical relationships into algebraic expressions using concrete materials	– demonstrate an understanding of different ways in which variables are used – identify, through investigation, the quantities in an equation that vary and those that remain constant	– demonstrate, through investigation, an understanding of variables as unknown quantities represented by a letter or other symbol
– evaluate algebraic expressions with up to three terms, by substituting fractions, decimals, and integers for the variables	Chapter 8 Curious Math, 8.3, Chapter 8 Math Game	3.4, 3.5 6.2, 6.3, 6.4, 6.5 8.3, 8.4, 8.5 Unit 10 Skills You'll Need	**Algebra** *Pathway 1:* Solving Problems Using Equations *Pathway 2:* Solving Simple Equations *Pathway 3:* Using Variables	– evaluate algebraic expressions by substituting natural numbers for the variables	– solve problems that use two or three symbols or letters as variables to represent different unknown quantities – determine the solution to a simple equation with one variable, through investigation using a variety of tools and strategies	
– make connections between solving equations and determining the term number in a pattern, using the general term	8.1	10.5	**Algebra** *Pathway 1:* Solving Problems Using Equations *Pathway 2:* Solving Simple Equations *Pathway 3:* Using Variables	– translate phrases describing simple mathematical relationships into algebraic expressions using concrete materials		
– solve and verify linear equations involving a one-variable term and having solutions that are integers, by using inspection, guess and check, and a "balance" model	8.4, 8.5, 8.6	1.5, 1.6 10.4, 10.5	**Algebra** *Pathway 1:* Solving Problems Using Equations *Pathway 2:* Solving Simple Equations *Pathway 3:* Using Variables	– solve linear equations of the form $ax = c$ or $c = ax$ and $ax + b = c$ or variations such as $b + ax = c$ and $c = bx + a$ (where a, b, and c are natural numbers) by modelling with concrete materials, by inspection, or by guess and check, with and without the aid of a calculator	– determine the solution to a simple equation with one variable, through investigation using a variety of tools and strategies	– determine the missing number in equations involving addition, subtraction, multiplication, or division and one- or two-digit numbers, using a variety of tools and strategies

Grade 8 Ontario expectations	*Nelson Mathematics 8*	*Math Makes Sense 8*	*Leaps and Bounds 7/8* Topics	Grade 7 Ontario expectations	Grade 6 Ontario expectations	Grade 5 Ontario expectations
Data Management and Probability: Collection and Organization of Data						
– collect data by conducting a survey or an experiment to do with themselves, their environment, issues in their school or community, or content from another subject, and record observations or measurements	3.2, 3.6, Chapter 3 Task	5.1, 5.6 with supporting TG note	**Displaying Data** *Pathway 2:* Bias and Sampling *Pathway 3:* Interpreting Graphs	– collect data by conducting a survey or an experiment to do with themselves, their environment, issues in their school or community, or content from another subject and record observations or measurements	– collect data by conducting a survey or an experiment to do with themselves, their environment, issues in their school or community, or content from another subject, and record observations or measurements	– collect data by conducting a survey or an experiment to do with themselves, their environment, issues in their school or community, or content from another subject, and record observations or measurements; – describe, through investigation, how a set of data is collected and explain whether the collection method is appropriate.
– organize into intervals a set of data that is spread over a broad range – collect and organize categorical, discrete, or continuous primary data and secondary data, and display the data in charts, tables, and graphs (including histograms and scatter plots) that have appropriate titles, labels, and scales – select an appropriate type of graph to represent a set of data, graph the data using technology, and justify the choice of graph (i.e., from types of graphs already studied, including histograms and scatter plots)	3.1, 3.4	5.2 with supporting TG notes, 5.3, 5.5, 5.6, Technology Feature on pg. 192	**Displaying Data** *Pathway 1:* Using Circle Graphs and Line Graphs *Pathway 2:* Bias and Sampling *Pathway 3:* Interpreting Graphs	– collect and organize categorical, discrete, or continuous primary data and secondary data and display the data in charts, tables, and graphs (including relative frequency tables and circle graphs) that have appropriate titles, labels, and scales that suit the range and distribution of the data, using a variety of tools – select an appropriate type of graph to represent a set of data, graph the data using technology, and justify the choice of graph (i.e., from types of graphs already studied)	– collect and organize discrete or continuous primary data and secondary data and display the data in charts, tables, and graphs (including continuous line graphs) that have appropriate titles, labels, and scales that suit the range and distribution of the data, using a variety of tools – select an appropriate type of graph to represent a set of data, graph the data using technology, and justify the choice of graph (i.e., from types of graphs already studied, such as pictographs, horizontal or vertical bar graphs, stem-and-leaf plots, double bar graphs, broken-line graphs, and continuous line graphs)	– distinguish between discrete data (i.e., data organized using numbers that have gaps between them, such as whole numbers, and often used to represent a count, such as the number of times a word is used) and continuous data (i.e., data organized using all numbers on a number line that fall within the range of the data, and used to represent measurements such as heights or ages of trees) – collect and organize discrete or continuous primary data and secondary data and display the data in charts, tables, and graphs (including broken-line graphs) that have appropriate titles, labels, and scales that suit the range and distribution of the data, using a variety of tools

Grade 8 Ontario expectations	*Nelson Mathematics 8*	*Math Makes Sense 8*	*Leaps and Bounds 7/8* Topics	Grade 7 Ontario expectations	Grade 6 Ontario expectations	Grade 5 Ontario expectations
– explain the relationship between a census, a representative sample, sample size, and a population	3.2	5.1	**Displaying Data** *Pathway 1:* Using Circle Graphs and Line Graphs *Pathway 2:* Bias and Sampling *Pathway 3:* Interpreting Graphs	– distinguish between a census and a sample from a population – identify bias in data collection methods	– determine, through investigation, how well a set of data represents a population, on the basis of the method that was used to collect the data	– demonstrate an understanding that sets of data can be samples of larger populations – describe, through investigation, how a set of data is collected and explain whether the collection method is appropriate
Data Management and Probability: Data Relationships						
– read, interpret, and draw conclusions from primary data and from secondary data, presented in charts, tables, and graphs (including frequency tables with intervals, histograms, and scatter plots)	3.1, 3.2, 3.3, 3.4	Unit 5 Skills You'll Need, 5.2 with supporting TG note, 5.3, 5.5, 5.6	**Displaying Data** *Pathway 1:* Using Circle Graphs and Line Graphs *Pathway 2:* Bias and Sampling *Pathway 3:* Interpreting Graphs	– read, interpret, and draw conclusions from primary data and from secondary data, presented in charts, tables, and graphs (including relative frequency tables and circle graphs) – identify, through investigation, graphs that present data in misleading ways	– read, interpret, and draw conclusions from primary data and from secondary data, presented in charts, tables, and graphs (including continuous line graphs) – explain how different scales used on graphs can influence conclusions drawn from the data – compare, through investigation, different graphical representations of the same data	– read, interpret, and draw conclusions from primary data and from secondary data, presented in charts, tables, and graphs (including broken-line graphs) – compare similarities and differences between two related sets of data, using a variety of strategies
– determine, through investigation, the appropriate measure of central tendency (i.e., mean, median, or mode) needed to compare sets of data	3.5, Chapter 3 Math Game	5.4	**Summarizing Data** *Pathway 1*: Effects of Changing Data *Pathway 2*: Using Mean, Median, and Mode *Pathway 3*: Calculating the Mean	– determine, through investigation, the effect on a measure of central tendency (i.e., mean, median, and mode) of adding or removing a value or values	– demonstrate an understanding of mean, and use the mean to compare two sets of related data, with and without the use of technology	– calculate the mean for a small set of data and use it to describe the shape of the data set across its range of values, using charts, tables, and graphs
– demonstrate an understanding of the appropriate uses of bar graphs and histograms by comparing their characteristics	3.4	5.5				

Grade 8 Ontario expectations	*Nelson Mathematics 8*	*Math Makes Sense 8*	*Leaps and Bounds 7/8* Topics	Grade 7 Ontario expectations	Grade 6 Ontario expectations	Grade 5 Ontario expectations
– compare two attributes or characteristics, using a scatter plot, and determine whether or not the scatter plot suggests a relationship	3.1	5.2 with supporting TG note				
– identify and describe trends, based on the rate of change of data from tables and graphs, using informal language	4.5	Unit 5, Skills You'll Need, 5.3	**Displaying Data** *Pathway 1:* Using Circle Graphs and Line Graphs *Pathway 2:* Bias and Sampling *Pathway 3:* Interpreting Graphs	– identify and describe trends, based on the distribution of the data presented in tables and graphs, using informal language		
– make inferences and convincing arguments that are based on the analysis of charts, tables, and graphs	3.1, 3.2, 3.3, 3.4	5.2	**Displaying Data** *Pathway 1:* Using Circle Graphs and Line Graphs *Pathway 2:* Bias and Sampling *Pathway 3:* Interpreting Graphs	– make inferences and convincing arguments that are based on the analysis of charts, tables, and graphs	– demonstrate, through investigation, an understanding of how data from charts, tables, and graphs can be used to make inferences and convincing arguments	
– compare two attributes or characteristics, using a variety of data management tools and strategies (i.e., pose a relevant question, then design an experiment or survey, collect and analyse the data, and draw conclusions)	3.4, 3.6, Chapter 3 Task	5.2 with supporting TG note				

Grade 8 Ontario expectations	*Nelson Mathematics 8*	*Math Makes Sense 8*	*Leaps and Bounds 7/8* Topics	Grade 7 Ontario expectations	Grade 6 Ontario expectations	Grade 5 Ontario expectations
Data Management and Probability: Probability						
– compare, through investigation, the theoretical probability of an event (i.e., the ratio of the number of ways a favourable outcome can occur compared to the total number of possible outcomes) with experimental probability, and explain why they might differ. – determine, through investigation, the tendency of experimental probability to approach theoretical probability as the number of trials in an experiment increases, using class-generated data and technology-based simulation models – identify the complementary event for a given event, and calculate the theoretical probability that a given event will not occur	12.1, 12.2, 12.3	11.1, 11.2, 11.2A Technology Feature	**Probability** *Pathway 1:* Probability: Independent Events *Pathway 2:* Theoretical Probability *Pathway 3:* Experimental Probability	– research and report on real-world applications of probabilities expressed in fraction, decimal, and percent form – make predictions about a population when given a probability – represent in a variety of ways all the possible outcomes of a probability experiment involving two independent events, and determine the theoretical probability of a specific outcome involving two independent events – perform a simple probability experiment involving two independent events, and compare the experimental probability with the theoretical probability of a specific outcome	– express theoretical probability as a ratio of the number of favourable outcomes to the total number of possible outcomes, where all outcomes are equally likely – represent the probability of an event (i.e., the likelihood that the event will occur), using a value from the range of 0 (never happens or impossible) to 1 (always happens or certain); – predict the frequency of an outcome of a simple probability experiment or game, by calculating and using the theoretical probability of that outcome	– determine and represent all the possible outcomes in a simple probability experiment – represent, using a common fraction, the probability that an event will occur in simple games and probability experiments – pose and solve simple probability problems, and solve them by conducting probability experiments and selecting appropriate methods of recording the results