

Scope and Sequence Documents Gr. 8 - Foundations 30

Skill	Grade 8	Grade 9	F & P 10	Foundations 20	Foundations 30
Comparing & Ordering Numbers		N9.2: Demonstrate understanding of rational numbers including: comparing and ordering; relating to other types of numbers; solving situational questions.			
Order of Operations		N9.2: Demonstrate understanding of rational numbers including: comparing and ordering; relating to other types of numbers; solving situational questions.			
Fractions ↔ Decimals ↔ Percents	N8.2: Expand and demonstrate understanding of percents greater than or equal to 0% (including fractional and decimal percents) concretely, pictorially, and symbolically. N8.4: Demonstrate understanding of multiplying and dividing positive fractions and mixed numbers, concretely, pictorially, and symbolically.				
Exponents & Radicals	N8.1: Demonstrate understanding of the square and principle square root of whole numbers concretely or pictorially and symbolically. SS8.1: Demonstrate understanding of the Pythagorean Theorem concretely or pictorially and symbolically and by solving problems.	N9.1: Demonstrate (concretely, pictorially, and symbolically) understanding of powers with integral bases (excluding base 0) and whole number exponents including: representing using powers; evaluating powers; powers with an exponent of zero; solving situational questions. N9.3: Extend understanding of square roots to include the square root of positive rational numbers.	FP10.1: Demonstrate understanding of factors of whole numbers by determining the: prime factors; greatest common factor; least common multiple; principal square root; cube root. FP10.2: Demonstrate understanding of irrational numbers in both radical (including mixed radical) and exponent forms through: representing; identifying; simplifying; ordering; relating to rational numbers; applying exponent laws.		
Preservation of Equality (integrated within course)					
Financial Math					FM30.1 Demonstrate understanding of financial decision making including analysis of: *renting, leasing, and buying * credit * compound interest * investment portfolios.
Polynomials		P9.4: Demonstrate understanding of polynomials (limited to polynomials of degree less than or equal to 2) including: modeling; generalizing strategies for addition, subtraction, multiplication, and division; analyzing; relating to context; comparing for equivalency	FP10.1: Demonstrate understanding of factors of whole numbers by determining the: prime factors; greatest common factor; least common multiple; principal square root; cube root. FP10.5: Demonstrate understanding of the multiplication and factoring of polynomial expressions (concretely, pictorially, and symbolically) including: multiplying of monomials, binomials, and trinomials; common factors; trinomial factoring; relating multiplication and factoring of polynomials		
Linear Relations, Equations & Functions	P8.1: Demonstrate understanding of linear relations concretely, pictorially (including graphs), physically, and symbolically. P8.2: Model and solve problems using linear equations of the form: $ax = b$; $x/a = b$, $a \neq 0$; $ax + b = c$; $x/a + b = c$, $a \neq 0$; $a(x + b) = c$ concretely, pictorially, and symbolically, where	P9.1: Demonstrate understanding of linear relations including: graphing; analyzing; interpolating and extrapolating; solving situational questions P9.2: Model and solve situational questions using linear equations of the form: $ax = b$; $x/a = b$, $a \neq 0$; $ax + b = c$; $x/a + b = c$, $a \neq 0$; $ax = b +$	FP10.6: Expand and apply understanding of relations and functions including: relating data, graphs, and situations; analyzing and interpreting; distinguishing between relations and functions FP10.7: Demonstrate, with and without the use of technology, understanding of slope		

	a, b, and c are integers.	cx ; $a(x + b) = c$; $ax + b = cx + d$; $a(bx + c) = d(ex + f)$; $a/x = b$, $x \neq 0$ where a, b, c, d, e, and f are rational numbers P9.3: Demonstrate understanding of single variable linear inequalities with rational coefficients including: solving inequalities; verifying; comparing; graphing.	(concretely, pictorially, and symbolically) with respect to: line segments and lines; rate of change; ratio of rise to run; parallel lines; perpendicular lines. FP10.8: Demonstrate understanding of linear relations including: representing in words, ordered pairs, tables of values, graphs, function notation, and equations; determining characteristics including intercepts, slope, domain, and range; relating different equation forms to each other and to graphs. FP10.9: Demonstrate understanding of the writing and application of equations of linear relations, given: a graph of a relation; a point that satisfies a relation and the slope of the relation; two distinct points that satisfy a relation; a point that satisfies the relation and the equation of a line parallel or perpendicular to the relation.		
Polynomial Equations & Functions, Inequalities				FM20.9: Demonstrate an understanding of the characteristics of quadratic functions of the form $y = a(x - p)^2 + q$, including: Vertex; intercepts; domain and range; axis of symmetry.	FM30.7: Demonstrate understanding of the representation and analysis of data using: polynomial functions of degree ≤ 3
Systems of Equations & Inequalities			FP10.10: Solve problems that involve systems of linear equations in two variables, graphically and algebraically	FM20.8: Demonstrate understanding of systems of linear inequalities in two variables	
Radical Equations & Expressions					
Rational Equations & Expressions					
Exponential & Logarithmic Equations & Functions					FM30.7: Demonstrate understanding of the representation and analysis of data using: logarithmic functions and exponential functions
Measurement			FP10.3: Demonstrate understanding of SI and imperial units of measurement including: linear measurement; surface area of spheres, and right cones, cylinders, prisms, and pyramids; volume of spheres, and right cones, cylinders, prisms, and pyramids; relationships between and within measurement systems.		
Angles				FM20.4: Demonstrate understanding of properties of angles and triangles including: deriving proofs based on theorems and postulates about congruent triangles; solving problems.	
Solving Triangles & Trigonometric Functions	SS8.1: Demonstrate understanding of the Pythagorean Theorem concretely or pictorially and symbolically and by solving problems.		FP10.4: Develop and apply the primary trigonometric ratios (sine, cosine, tangent) to solve problems that involve right triangles	FM20.5: Demonstrate understanding of the cosine law and sine law (including the ambiguous case).	FM30.7: Demonstrate understanding of the representation and analysis of data using sinusoidal functions.
Shapes/Objects		SS9.1: Demonstrate understanding of circle properties including: perpendicular line segments from the centre of a circle to a chord bisect the chord; inscribed angles subtended by the same arc have the same measure; the	FP10.3: Demonstrate understanding of SI and imperial units of measurement including: linear measurement; surface area of spheres, and right cones, cylinders, prisms, and pyramids; volume of spheres, and right cones, cylinders,		

		measure of a central angle is twice the measure of an inscribed angle subtending the same arc; tangents to a circle are perpendicular to the radius ending at the point of tangency SS9.2: Extend understanding of area to surface area of right rectangular prisms, right cylinders, right triangular prisms, to composite 3-D objects	prisms, and pyramids; relationships between and within measurement systems.		
Similarity	N8.3: Demonstrate understanding of rates, ratios, and proportional reasoning concretely, pictorially, and symbolically	SS9.3: Demonstrate understanding of similarity of 2-D shapes		FM20.3: Expand and demonstrate understanding of proportional reasoning related to: rates; scale diagrams; scale factor; area; surface area; volume.	
Translations		SS9.4: Demonstrate understanding of line and rotation symmetry			
Sequences and Series					
Data Analysis		SP9.1: Demonstrate understanding of the effect of: bias; use of language • ethics; cost; time and timing; privacy; cultural sensitivity; population or sample on data collection. SP9.2: Demonstrate an understanding of the collection, display, and analysis of data through a project.		FM20.1: Demonstrate understanding of the mathematics involved in an historical event or an area of interest. FM20.6: Demonstrate an understanding of normal distribution, including standard deviation and z-scores. FM20.7: Demonstrate understanding of the interpretation of statistical data, including: confidence intervals; confidence levels; margin of error.	FM30.3: Demonstrate understanding of set theory and its applications. FM30.8: Research and give a presentation of a current event or an area of interest that requires data collection and analysis.
Permutations & Combinations					FM30.6: Demonstrate understanding of combinatorics including: the fundamental counting principle, permutations (excluding circular permutations), combinations.
Probability		SP9.3: Demonstrate an understanding of the role of probability in society. SP9.4: Research and present how First Nations and Métis peoples, past and present, envision, represent, and make use of probability and statistics.			FM30.4: Extend understanding of odds and probability. FM30.5: Extend understanding of the probability of two events, including events that are: mutually exclusive, non-mutually exclusive, dependent, independent.
Reasoning				FM20.2: Demonstrate understanding of inductive and deductive reasoning including: analyzing conjectures; analyzing spatial puzzles and games; providing conjectures; solving problems.	FM30.2: Demonstrate understanding of inductive and deductive reasoning including: analysis of conditional statements; analysis of puzzles and games involving numerical and logical reasoning; making and justifying decisions; solving problems.
Limit & Continuity					
Differentiation					
Integration					
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