Linking ON Math Curriculum to Binogi: GRADE 9 Examples

A. SEL Skills B. Number C. Algebra D. Data E. Spatial Sense F. Financial Literacy

Strand	Overall Expectations Category	Overall Expectation	Specific Expectation Category	Specific Expectation	Binogi Video
Number	B1. Development of Numbers and Number Sets	demonstrate an understanding of the development and use of numbers, and make connections between sets of numbers	B1.2	describe how various subsets of a number system are defined, and describe similarities and differences between these subsets	Rational Numbers The binary number system Irrational numbers The positional system with base 10 The Mayan number system Number sequences
	B2. Powers	represent numbers in various ways, evaluate powers, and simplify expressions by using the relationships between powers and their exponents	B2.1	analyse, through the use of patterning, the relationship between the sign and size of an exponent and the value of a power, and use this relationship to express numbers in scientific notation and evaluate powers	Scientific notation
			B2.2	analyse, through the use of patterning, the relationships between the exponents of powers and the operations with powers, and use these relationships to simplify numeric and algebraic expressions	Powers and exponents Equations with exponents and root expressions

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	B3. Number Sense and Operations	apply an understanding of rational numbers, ratios, rates, percentages, and proportions, in various mathematical contexts, and to solve problems	B3.2	apply an understanding of unit fractions and their relationship to other fractional amounts, in various contexts, including the use of measuring tools	Expanding and reducing fractions: Introduction Expanding and simplifying fractions: More examples Comparing fractions with different denominators
			B3.3	apply an understanding of integers to explain the effects that positive and negative signs have on the values of ratios, rates, fractions, and decimals, in various contexts	Rational numbers Introduction to negative numbers
			B3.4	solve problems involving operations with positive and negative fractions and mixed numbers, including problems involving formulas, measurements, and linear relations, using technology when appropriate	Multiplication with fractions Division with fractions Introduction to negative numbers Addition and subtraction with negative numbers Multiplication with negative numbers Division with negative numbers
			B3.5	pose and solve problems involving rates, percentages, and proportions in various contexts, including contexts connected to real-life applications of data, measurement, geometry, linear relations, and financial literacy	Introduction to percent Fractions, decimal numbers and percent Part, portion and percentage

Algebra	C1. Algebraic Expressions and Equations	demonstrate an understanding of the development and use of algebraic concepts and of their connection to numbers, using various tools and representations	C1.2	create algebraic expressions to generalize relationships expressed in words, numbers, and visual representations, in various contexts	Algebraic expressions Working with algebraic expressions: Introduction
			C1.4	simplify algebraic expressions by applying properties of operations of numbers, using various representations and tools, in different contexts	Multiplication with parentheses Squaring the binomial A minus sign before a parenthesis Multiplying linear expressions
			C1.5	create and solve equations for various contexts, and verify their solutions	Working with algebraic expressions: Examples
	C2. Coding	apply coding skills to represent mathematical concepts and relationships dynamically, and to solve problems, in algebra and across the other strands	C2.3	solve equations that involve multiple terms and whole numbers in various contexts, and verify solutions	The distance between two points (programming)
	C3. Application of Relations	represent and compare linear and non-linear relations that model real-life situations, and use these representations to make predictions	C3.3	compare two linear relations of the form y = ax + b graphically and algebraically, and interpret the meaning of their point of intersection in terms of a given context	Linear equation systems
	C4. Characteristics of Relations	demonstrate an understanding of the characteristics of various representations of linear and non-linear relations, using tools, including coding when appropriate	C4.2	graph relations represented as algebraic equations of the forms x = k, y = k, x + y = k, x – y = k, ax + by = k, and xy = k, and their associated inequalities, where a, b, and k are constants, to identify various characteristics and the points and/or regions defined by these equations and inequalities	Linear equations
			C4.3	translate, reflect, and rotate lines defined by y = ax, where a is a constant, and describe how each transformation affects the graphs and equations of the defined lines	Linear equation with a constant term

			C4.4	determine the equations of lines from graphs, tables of values, and concrete representations of linear relations by making connections between rates of change and slopes, and between initial values and y-intercepts, and use these equations to solve problems	Linear equations The slope of a line Other forms of linear equations
Data	D1. Collection, Representation, and Analysis of Data	describe the collection and use of data, and represent and analyse data involving one and two variables	D1.1	identify a current context involving a large amount of data, and describe potential implications and consequences of its collection, storage, representation, and use	Statistics: Frequency and Graphs Statistics: Mode and Median Statistics: Mean Range (Statistics)
			D1.2	represent and statistically analyse data from a real-life situation involving a single variable in various ways, including the use of quartile values and box plots	Quartiles Box and whisker plots
	D2. Mathematical Modelling	apply the process of mathematical modelling, using data and mathematical concepts from other strands, to represent, analyse, make predictions, and provide insight into real-life situations	D2.2	identify a question of interest requiring the collection and analysis of data, and identify the information needed to answer the question	Interpreting statistics: Introduction

Geometry and Measurement	E1. Geometric and Measurement Relationships	demonstrate an understanding of the development and use of geometric and measurement relationships, and apply these relationships to solve problems, including problems involving real-life situations	E1.2	create and analyse designs involving geometric relationships and circle and triangle properties, using various tools	The angles of a triangle The perimeter of a triangle The area of a triangle The circumference of a circle The area of a circle The area and perimeter of a circular sector
			E1.4	show how changing one or more dimensions of a two-dimensional shape and a three-dimensional object affects perimeter/circumference, area, surface area, and volume, using technology when appropriate	Optimum volume and surface area Optimum perimeter and area Calculating the area of a complex shape
			E1.5	solve problems involving the side-length relationship for right triangles in real-life situations, including problems that involve composite shapes	The Pythagorean theorem
			E1.6	solve problems using the relationships between the volume of prisms and pyramids and between the volume of cylinders and cones, involving various units of measure	Prisms Pyramids Cylinders The volume of a cone
Financial Literacy	F1. Financial Decisions	demonstrate the knowledge and skills needed to make informed financial decisions	F1.3	compare the effects that different interest rates, lengths of borrowing time, ways in which interest is calculated, and amounts of down payments have on the overall costs associated with purchasing goods or services, using appropriate tools	Simple Interest Compound Interest

			F1.4	modify budgets displayed in various ways to reflect specific changes in circumstances, and provide a rationale for the modifications	Pay now or later?

**Curriculum Expectation were adapted from The Ontario curriculum, grade 9 Mathematics De-streamed (2021)*
https://www.dcp.edu.gov.on.ca/en/curriculum/secondary-mathematics/courses/mth1w/strands