

Mathematics Scope & Sequence Grade 7/8

Strands and topics are sequenced to allow for fundamental skills and concepts to be introduced and built upon throughout the year to deepen understanding and make connections between mathematical concepts. Specific Expectations are noted, as well as any cross-strand connections. (You can create your own path on mathup.ca to match the following scope and sequence.)

Specific Expectations are noted, as well as any cross-strand connections. Please refer to the curriculum teacher supports for further details.

There should be an ongoing focus on the following expectations:

A1: Social and Emotional Learning

apply, to the best of their ability, a variety of social-emotional learning skills to support their use of the mathematical processes and their learning in connection with the expectations in the other five strands of the curriculum

C4: Mathematical Modeling

apply the process of mathematical modelling to represent, analyse, make predictions and provide insight into real-life situations

B2.1 Properties and Relationships

Use the properties of operations, and the relationships between addition, subtraction, multiplication and division, to solve problems involving whole numbers, including those requiring more than one operation, and check calculations

B2.2: Math Facts

- Gr. 4: recall and demonstrate multiplication facts for 1×1 to 10×10 , and related division facts
- Gr. 5: recall and demonstrate multiplication facts from 0×0 to 12×12 , and related division facts
- Gr. 6: understand the divisibility rules and use them to determine whether numbers are divisible by 2, 3, 4, 5, 6, 8, 9, and 10
- Gr. 7: understand and recall commonly used percents, fractions, and decimal equivalents
- Gr. 8: understand and recall commonly used square numbers and their square roots

B2.3 Mental Math

- Gr. 4: use mental math strategies to multiply whole numbers by 10, 100, and 1000, divide whole numbers by 10, and add and subtract decimal tenths, and explain the strategies used
- Gr. 5: use mental math strategies to multiply whole numbers by 0.1 and 0.01 and estimate sums and differences of decimal numbers up to hundredths, and explain the strategies used
- Gr. 6: use mental math strategies to calculate percents of whole numbers, including 1%, 5%, 10%, 15%, 25%, and 50%, and explain the strategies used
- Gr. 7: use mental math strategies to increase and decrease a whole number by 1%, 5%, 10%, 25%, 50%, and 100%, and explain the strategies used
- Gr. 8: use mental math strategies to multiply and divide whole numbers and decimal numbers up to thousandths by powers of ten, and explain the strategies used
- Number Talks by Shari Parish should be used 3 times a week to reinforce math facts and fluency ([Click Here](#))

*If you see a grey box, you can make note of areas to return to if students are struggling. If you do not have a combined grade you can simply move on to the next topic

Resources & Tools for Creating a Balanced Mathematics Program							
Engaging Math Tasks	Ministry Supports	Math @ Home	Math Skills Practice	Digital Manipulatives	Videos: Teaching with MathUp	MathUP Masters	Assessment
yocubed	High-Impact Instructional Practices	PVNCCDSB Math	Knowledgehook	Polypad Intro to Polypad Video	Part 1: Minds On Part 2: Action Part 3: Consolidate Part 4: Your Turn	Math Printable Masters	Math Assessment & Evaluation (It's more than a mark)
3-Act-Math Tasks	Math Curriculum Documents	Free Math Tutoring	IXL Ontario Curriculum	DESMOS		Teaching Combined Grades	EQAO Assessments
Learning Progression Documents: Number Sense and Numeration Kindergarten Grade 1 Grade 2 Grade 3 Grade 4 Grade 5 Grade 6 Grade 7 Grade 8							

PVNCCDSB Scope & Sequence has been adapted from Northeastern Catholic District School Boards Fall 2022 Document:
[https://www.ncdsb.on.ca/2022%20Mathematics%20Scope%20&%20Sequence%20\(4-8\).pdf](https://www.ncdsb.on.ca/2022%20Mathematics%20Scope%20&%20Sequence%20(4-8).pdf)

 PVNCCDSB Gr. 7/8 Mathematics Scope and Sequence 2025			
Mathematical High Impact Practices include: Learning Goals, Success Criteria & Descriptive Feedback Direct Instruction Math Conversations Flexible Groupings Problem-Solving Tasks Small-Group Instruction Tools & Representation Deliberate Practice			
Effective math instruction begins when educators have high expectations of students and believe that all students have the potential to learn and do math. It uses culturally relevant practices and differentiated learning experiences to meet individual students' learning needs. It focuses on the development of conceptual understanding and procedural fluency, skill development, communication, and problem-solving skills. And it involves educators choosing from and using a variety of high-impact instructional practices (Hattie, 2009; National Council of Teachers of Mathematics, 2014).			
TERM ONE PROGRESS REPORTS			
 The First 20 Days of MathUP			
About 20 days	Social-Emotional Learning Skills First 20 Days Gr. 7 First 20 days Gr. 8 A1 *Embed throughout	PURPOSE: Foster well-being Support math learning to high levels for all learners Develop SEL skills and the mathematical processes Contribute to equitable opportunities and outcomes Think critically and creatively	EXPECTATIONS: Build relationships and communicate effectively Maintain positive motivation and perseverance Recognize sources of stress and cope with challenges Identify and manage emotions

Time Frame	Strands	Grade 7	Grade 8
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About 14 days	Grade 7: Number B1, B2 Grade 8: Number B1, B2 Algebra C4	<u>POWERS & ROOTS</u> - Represent and compare whole numbers up to and including one billion (power of 10) - Identify and represent perfect squares and determine their roots - Evaluate and express repeated multiplication of whole numbers using exponential notation - Use math models to represent real-life situations	<u>WHOLE NUMBER & DECIMAL OPERATIONS</u> - Estimate and calculate square roots - Multiply and divide by Powers of 10 - Evaluate numerical expressions - Solve problems involving whole numbers and decimal numbers up to thousandths by powers of 10 - Understand and recall commonly used square numbers and their roots
	Grade 7: Number B1 Grade 8: Number B1 Algebra C1	<u>RATIONAL NUMBERS</u> Read, represent, compare and order rational numbers, including positive and negative fractions and decimal numbers to thousandths	<u>RATIONAL & IRRATIONAL NUMBERS</u> - Describe, compare, and order rational and irrational numbers - Use patterns and the relationships between fractions and division to write repeating decimals as fractions - Use patterns to describe or make predictions about real-life scenarios
About 12 days	Grade 7: Number B2 Algebra C1 Grade 8: Number B2 Algebra C4	<u>ADDING & SUBTRACTING INTEGERS</u> - Use objects, diagrams, and equations to represent, describe, and solve situations - Represent positive and negative integers by adding zeros - Use patterns to describe or make predictions about real-life scenarios	<u>INTEGER OPERATIONS</u> - Add and subtract integers - Multiply and divide integers - Solve problems using the order of operations - Use math models to represent real-life situations
About 4 days	Grade 7: Spatial Sense E1 Algebra C3 Grade 8: Spatial Sense E1	<u>DILATIONS & SIMILARITY</u> - Perform dilations and describe the similarity between the image and the original shape - Write and execute code, including code that involves events influenced by a defined count and /or sub-program and other control structures - Read and alter code	<u>SIMILARITY</u> - Use scale drawings to calculate actual lengths and areas - Reproduce scale drawings at different ratios
About 7 days	Grade 7: Spatial Sense E1 Grade 8: Spatial Sense E2	<u>GEOMETRIC REPRESENTATIONS</u> - Draw top, front, and side views, as well as perspective views, of objects (3D structures) and physical spaces - Use appropriate scales	<u>ANGLE RELATIONSHIPS</u> - Describe relationships among angles created when parallel lines are crossed by a transversal - Determine that the sum of the angle measures in a triangle is 180°
About 6 days	Grade 7: Number B1 Algebra C4 Grade 8: Number B1, B2 Spatial Sense E2	<u>REPRESENTING LARGE NUMBERS</u> - Represent and compare whole numbers up to and including one billion - Expanded form using powers of ten - Use of place value - Use math models to represent real-life situations	<u>LARGE & SMALL NUMBERS</u> - Represent and compare very large and very small numbers through the use of scientific notations - Mental math strategies to multiply and divide whole numbers and decimal numbers by to thousandths by powers of 10 (Link to Measurement (E2)) - Represent metric units: mega, giga, tera, micro, nana, pico
About 8 days	Grade 7: Data D1 Grade 8: Data D1 Algebra C4	<u>DISPLAYING DATA</u> - Explain why percentages are used to represent the distribution of a variable for a population or sample in large sets of data - Graph various sets of data, using proper sources, titles, labels, and scales - Create and interpret infographics	<u>DISPLAYING DATA</u> - Select among a variety of graphs, including scatter plots to display data - Represent data in infographics - Interpret scatter plots to describe the nature of the relationship between two variables - Use math models to represent real-life situations
TERM 1 - AFTER PROGRESS REPORTS			
About 6 days	Grade 7: Number B1 Algebra C4	<u>RATES & RATIOS</u> - Identify proportional (equivalent) and non-proportional situations: equivalent ratios - Apply proportional reasoning to solve problems: ratio and rate problems - Use math models to represent real-life situations	Return to areas students may be struggling with.
About 7 days	Grade 7: Number B1, B2	<u>DECIMAL OPERATIONS</u> - Round decimal numbers to the nearest tenth, hundredth, or whole number - Solve problems involving whole and decimal numbers	Return to areas students may be struggling with.

		Multiply and divide decimal numbers by decimal numbers	
About 7 days	Grade 7: Spatial Sense E1 Algebra C1 Grade 8: Spatial Sense E1 Algebra C3	TRANSFORMATIONS - Describe and perform translations, reflections, and rotations on a Cartesian plane - Predict the results of transformations - Identify and compare repeating patterns found in real-life contexts	TRANSFORMATIONS AND GEOMETRIC RELATIONSHIPS - Identify geometric properties of tessellating shapes - Identify transformations that occur in tessellations - Make objects and models using scales, given their top, front, and side views or perspective views - Describe and perform translations, reflections, rotations, and dilations on a Cartesian plane - Write and execute code - Read and alter existing code and describe how the changes help the efficiency of the code
About 6 days	Grade 7: Algebra C1 Grade 8: Algebra C1, C2	PATTERNS - Identify and compare repeating, growing, and shrinking patterns - Compare linear growing patterns on the basis of their constant rates and initial values - Create and translate repeating, growing, and shrinking patterns, involving whole and decimal numbers - Use algebraic expressions and equations for linear growing patterns - Determine pattern rules and use them to extend patterns - Make predictions and identify missing elements in patterns with whole and decimal numbers - Use algebraic representations to solve for unknown values in linear growing patterns	USING ALGEBRA - Add and subtract monomials with a degree of 1 - Add binomials with a degree of 1 that involve integers - Evaluate algebraic expressions that involve rational numbers - Solve equations that involve multiple terms, integers, and decimal numbers
About 8 days	Grade 7: Number B1, B2 Algebra C4 Grade 8: Number B1, B2 Algebra C4	PERCENT - Convert between fractions and percents - Solve problems involving whole numbers, decimal numbers, fractions, ratios, rates, and percents - Understand and recall commonly used percents, fractions, and decimal equivalents - Use mental math strategies to increase and decrease a whole number by 1%, 5%, 10%, 25%, 50%, and 100% - Use math models to represent real-life situations	PERCENT - Use fractions, decimal numbers, and percents, including percents of more than 100% or less than 1%, interchangeably and flexibly - Calculate decimal percents and fractions - Solve problems that involve calculating percents - Use math models to represent real-life situations
About 10 days	Grade 7: Number B1, B2 Grade 8: Number B2	FRACTIONS - Use equivalent fractions to simplify fractions - Generate fractions and decimal numbers between any two quantities - Add and subtract fractions, including creating equivalent fractions - Multiply and divide fractions by fractions	FRACTION OPERATIONS - Multiply and divide fractions by fractions - Multiply and divide fractions by whole numbers and mixed numbers - Add and subtract fractions - Solve problems
About 7 days		Return to areas students may be struggling with.	Return to areas students may be struggling with.
TERM 2			
About 6 days	Grade 7: Spatial Sense E2 Algebra C4 Grade 8: Spatial Sense E2	CIRCLE MEASUREMENT - Relationships between the radius, diameter, and circumference of a circle - Explain the formula for finding the circumference - Solve problems - Construct circles when given the radius, diameter, or circumference - Formula for the area of a circle - Use math models to represent real-life situations	MEASUREMENT - Solve problems involving the perimeter, circumference, area, volume, and surface area of composite 2D shapes and 3D objects - Solve problems using volume and surface area of 3D objects
About 4-5 days		Return to areas students may be struggling with.	Return to areas students may be struggling with.
About 5 days		Return to areas students may be struggling with.	Return to areas students may be struggling with.
About 6 days	Grade 7: Data D1 Grade 8: Data D1 Algebra C4	COLLECTING, USING & DESCRIBING DATA - Analyse different sets of data presented in various ways, including circle graphs and in misleading graphs - Determine the impact of adding or removing data from a data set on a measure of central tendency, and describe how these changes alter the shape and distribution of the data - Collect qualitative data and discrete and continuous quantitative data to answer questions - Organize sets of data and use percentages	COLLECTING & INTERPRETING DATA - Collect continuous data to answer questions involving two variables - Organize data sets in a table of values - Analyse different sets of data presented in scatter plots and misleading graphs - Draw conclusions about data - Use math models to represent real-life situations

About 8 days	Grade 7: Number B2	<u>FACTORS & MULTIPLES</u> - Use properties and order of operations and inverse operations, to solve problems involving whole numbers - Determine the greatest common factor for a variety of whole numbers up to 144 - Determine the lowest common multiple for two or three whole numbers	Return to areas students may be struggling with.
MARCH BREAK			
About 4 days	Grade 7: Spatial Sense E2	<u>AREA & SURFACE AREA</u> - Solve problems involving perimeter and area that require converting metric units - Represent cylinders as nets and determine their surface area by adding the areas of their parts	Return to areas students may be struggling with.
About 6 days	Grade 7: Algebra C2 Grade 8: Algebra C2	<u>ALGEBRA</u> - Add and subtract monomials with a degree of 1 that involve whole numbers - Evaluate algebraic expressions that involve whole and decimal numbers - Solve equations that involve multiple terms, whole numbers, and decimal numbers - Solve inequalities that involve multiple terms and whole numbers, and verify and graph the solutions	<u>SOLVING EQUATIONS & INEQUALITIES</u> - Solve equations that involve multiple terms, integers, and decimal numbers - Solve inequalities that involve integers and graph the solutions
About 6-9 days		Return to areas students may be struggling with.	Return to areas students may be struggling with.
About 6 days	Grade 7: Spatial Sense E1	<u>DESCRIBING & CLASSIFYING 3D OBJECTS</u> - Describe and classify cylinders, pyramids, and prisms according to their geometric properties - Identify plane and rotational symmetry	Return to areas students may be struggling with.
About 7 days	Grade 7: Financial Literacy F1 Algebra C4 Grade 8: Financial Literacy F1 Algebra C2, C3, C4	<u>FINANCIAL LITERACY</u> - Identify and compare exchange rates, and convert foreign currencies to Canadian dollars and vice versa - Identify and describe various reliable sources of information that can help with planning for and reaching a financial goal - Create, track, and adjust sample budgets designed to meet longer-term financial goals - Identify various societal and personal factors that may influence financial decision-making and the effects each might have - Explain how interest rates can impact saving, investments, and the cost of borrowing to pay for goods and services over time - Compare interest rates and fees for different accounts and loans offered by various financial institutions - Use math models to represent real-life situations	<u>FINANCIAL LITERACY</u> - Describe advantages and disadvantages of various methods of payment when dealing with multiple currencies and exchange rates - Create a financial plan to reach a long-term goal (account for income, expenses, and tax) - Identify ways to maintain a balanced budget and track it - Determine the growth of simple and compound interest at various rates - Compare ways for consumers to get more value for their money - Compare interest rates, annual fees, and rewards by various credit card companies and consumer contracts - Use math models to represent real-life situations
About 4 days	Grade 7: Data D2 Grade 8: Data D2	<u>PROBABILITY</u> - Describe the difference between independent and dependent events - Explain how probabilities differ - Determine and compare theoretical and experimental probabilities of two events	<u>PROBABILITY</u> - Solve problems involving probability - Use venn and tree diagrams - Determine and compare the theoretical and experimental probabilities of multiple independent events and depends events
About 9 days	Grade 7: Algebra C4 Number B2 Grade 8: Algebra C1	<u>REPRESENTING LINEAR RELATIONSHIPS</u> - Identify proportional (equivalent) and non-proportional situations - Apply proportional reasoning to solve problems - Graph linear relationships and describe them algebraically	<u>LINEAR PATTERNS & RELATIONSHIPS</u> - Determine pattern rules and use them to extend patterns - Make and justify predictions - Identify missing elements in growing and shrinking patterns - Use algebraic expressions of the pattern rules to solve for unknown values in linear patterns - Identify, compare, create and translate repeating, growing, and shrinking patterns
About 12 days	Grade 7: Spatial Sense E2 Algebra C3 Grade 8: Spatial Sense E2	<u>VOLUME</u> - Relating volume to capacity (mL to cm³) - Solve problems involving area and volume that require conversion - Volume of a prism or cylinder - Write and execute code - Read and alter code	<u>THE PYTHAGOREAN THEOREM</u> - Describe the pythagorean relationship using geometric models - Apply the theorem to solve problems involving an unknown side length for a given right triangle