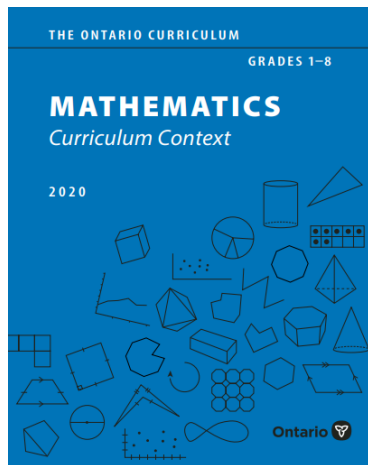


District School Board of Niagara Mathematics Scope & Sequence – Intermediate 2020/21 Version

Our Goal: To nurture a love of mathematics, while developing thinking and reasoning skills, confidence and perseverance, and mathematical understanding that empowers students to solve problems in their current and future lives.



As a result of changes to the curriculum, we felt that this previously created representation of effective mathematics teaching and learning would help us to reflect about the goals of our student-centered mathematics classrooms.



Students will:
Develop their procedural fluency from conceptual understanding in a way that enables them to acquire and use mathematics as an interconnected body of ideas and relationships.



Students will:
See themselves as mathematicians who have the confidence and perseverance to take risks and solve challenging problems.

Reflective Questions to guide our focus throughout the year:

How will we focus on both developing mathematical understanding and nurturing mathematicians?

How does this curriculum's focus on teaching through problem solving and representing help to develop reasoning and sense making?

How does this curriculum support the whole child in developing a positive math identity?

How can the mathematical processes be a vehicle to help children learn about their social-emotional learning skills?

2020/21 DSBN MATHEMATICS SCOPE & SEQUENCE – INTERMEDIATE VERSION	
ALL YEAR	<ul style="list-style-type: none"> • Spatial, Algebraic and Proportional Reasoning are overarching ideas that permeate mathematics learning across all strands. Focus on both developing these reasoning skills and using them to support student learning of various concepts. • Effective instruction remains grounded in moving back and forth within the Concrete-Representation-Abstract sequence. Manipulatives and models remain a critical aspect of students’ abilities to make sense of the mathematics they are learning. • The sequence presented below is designed to make connections between concepts, as this supports the view of mathematics as an interconnected discipline rather than a series of isolated skills (e.g., measurement as a context for number, probability and data as a context for number, patterns as a context for shape and number, location & movement as a context for coding). • The curriculum is explicit in emphasizing ‘everyday’ and ‘real-life’. Ground problems and activities in our students’ lived world. ‘In various contexts’ is a descriptor for most number sense expectations, encouraging us to learn about number through experiences in other strands. Despite ‘back to basics’ messaging in the media, this curriculum emphasizes both representations and contexts to develop number sense. • Intentionally revisiting concepts throughout the year is important (see Curriculum Connections column).
ALL YEAR	<p>Social-Emotional Learning (SEL) Skills in Mathematics and the Mathematical Processes</p> <ul style="list-style-type: none"> • These student SELs give us language to identify, support and celebrate students in a wholistic manner. • They celebrate the affect involved in learning mathematics and demand the need for our mathematics classrooms to be student-centered, with students as the decision makers within problem solving (This reinforces even more that all expectations start with ‘Students will...’). • The mathematical processes remain a focus of the purpose of learning mathematics. Consider how we can both use the process skills to learn within the topics below and how the topics below can serve as the vehicle to help develop and support the process skills.
ALL YEAR	<p>Mathematical Modelling</p> <ul style="list-style-type: none"> • “Mathematical modelling provides authentic connections to real-life situations. The process starts with ill-defined, often messy real-life problems that may have several different solutions that are all correct. Mathematical modelling requires the modeller to be critical and creative and make choices, assumptions, and decisions. Through this process, they create a mathematical model that describes a situation using mathematical concepts and language, and that can be used to solve a problem or make decisions and can be used to deepen understanding of mathematical concepts.” (p. 34) • This overall expectation is embedded throughout other strands and is explicit in order to support and develop the behaviours of effective mathematicians who notice and wonder about things all the time and who use models to visualize and make sense of problems they are trying to solve!
ALL YEAR	<ul style="list-style-type: none"> • The major part of every math class is based in the topics listed in the Scope & Sequence below. • A minor part of every math class is based in a non-topic ‘routine’: <ul style="list-style-type: none"> ○ When in a number topic, plan an ‘Engaging the Mathematician’ task (e.g., Solveme mobiles, woddb, estimation180, Visual patterns, Geogebra.org tasks, Logic games, ‘Who made this graph? Why?’, #mathphoto #mathartchallenge, Tangram & Pentomino Puzzles) ○ When in a non-number topic, plan a ‘Computational Fluency’ task (e.g., math strings, choral counting, number talks, number of the day, True or False Equality, Card & Dice Games, Fractiontalks, Open middle problems, 24, Money) ○ Gizmos (Ministry Licensed) offers individualized ‘lessons’ to students in all strands ○ Certain topics and expectations from the curriculum should be addressed primarily through routine and/or actual everyday contexts (i.e., B2.3 Mental Math, B2.2 Math Facts)

Term 1

Week	Grade 7	Grade 8	Curriculum Connections
1	Welcoming my Mathematicians!		A B, C, D or E
2 3 4 5	C1 Patterns: identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts		B: Whole Numbers & Operational Sense (+/-) & (x/÷) C: Variables & Equality E: Geometric Reasoning The Arts & Physical Education
6 7	<p>'Investigating Numbers'</p> <p>B1 Whole Numbers & Fractions/Decimals/Percents: demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life</p> <p><i>B2 Addition/Subtraction, Multiplication/Division, Proportions: use knowledge of numbers and operations to solve mathematical problems encountered in everyday life</i></p>		C: Equality & Patterns D: Organizing & Scale E: Geometry & Measurement F: Money Concepts
8	D1 Data: manage, analyse, and use data to make convincing arguments and informed decisions, in various contexts drawn from real life		B: Numbers & Operational Sense E: Spatial Sense
9	C4 Mathematical Modelling: apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations		A B, C, D, E and/or F
Building Spatial & Algebraic Thinking through Contexts of Geometry & Measurement			B, C & E
10	E1 Geometric Reasoning: describe and represent shape, location, and movement by applying geometric properties and spatial relationships in order to navigate the world around them		C: Equality E: Measurement
11	C3 Coding: solve problems and create computational representations of mathematical situations using coding concepts and skills	E2 Lines & Angles: compare, estimate, and determine measurements in various contexts	B: Whole Numbers & Operational Sense E: Geometric Reasoning
12	E2 Measurement (Circles, Volume & Surface Area, & Metric System): compare, estimate, and determine measurements in various contexts C2 Variables & Equality/Inequality: demonstrate an understanding of variables, expressions, equalities, and inequalities, and apply this understanding in various contexts	C3 Coding: solve problems and create computational representations of mathematical situations using coding concepts and skills	Coding: C: Equality E: Geometry, Location & Movement
13		E2 Measurement (Length, Area & Volume, Pythagorean Relationship & Metric System): compare, estimate, and determine measurements in various contexts C2 Variables & Equality/Inequality: demonstrate an understanding of variables, expressions, equalities, and inequalities, and apply this understanding in various contexts	B: Whole Numbers, Fractions & Operational Sense C: Equality D: Organizing Data E: Geometric Reasoning
14 15			
Winter Break			
16	Revisit and Reflect on SELs & Mathematical Processes		A B, C, D, E or F

Term 2

Week	Grade 7	Grade 8	Curriculum Connections
Building Proportional Thinking through Contexts of Probability & Data			B & E
1 2 3	D2 Probability: describe the likelihood that events will happen, and use that information to make predictions		B: Fractions/Decimals/Percents, Operational Sense (+/-) & (x/÷) & Proportions D: Data E: Measurement
4 5	B2 Fractions/Decimals/Percents (+/-) & (x,÷): use knowledge of numbers and operations to solve mathematical problems encountered in everyday life B1 Fractions/Decimals/Percents: demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life		D: Probability & Data E: Measurement, Geometry The Arts (Music)
6 7 8 9	D1 Data: manage, analyse, and use data to make convincing arguments and informed decisions, in various contexts drawn from real life		B: Whole Numbers, Fractions/Decimals/Percents & Operational Sense (+/-) & (x/÷) C: Patterns (Gr. 8) D: Probability E: Circles (Gr. 7) & Science Language
March Break			
Building Spatial, Algebraic & Proportional Thinking through Contexts of Coding, Location & Movement, & Integers			B, C & E
10	C3 Coding: solve problems and create computational representations of mathematical situations using coding concepts and skills		C: Patterns E: Geometry, Angles, Location & Movement
11 12	E1 Location & Movement: describe and represent shape, location, and movement by applying geometric properties and spatial relationships in order to navigate the world around them		B: Integers C: Patterns E: Geometry & Measurement The Arts & Physical Education
13 14	B2 Integers: use knowledge of numbers and operations to solve mathematical problems encountered in everyday life		C: Patterns E: Location & Movement
15	C1 Patterns (including Shrinking Patterns): identify, describe, extend, create, and make predictions about a variety of patterns, including those found in real-life contexts		B: Integers C: Variables & Equality D: Two-Variable Data (Gr. 8)
16 17 18	C2 Variables & Equality/ Inequality : demonstrate an understanding of variables, expressions, equalities, and inequalities, and apply this understanding in various contexts E2 Measurement: compare, estimate, and determine measurements in various contexts		B: Operational Sense C: Patterns E: Location & Movement
19 20	B2 Proportions: use knowledge of numbers and operations to solve mathematical problems encountered in everyday life C4 Mathematical Modelling: apply the process of mathematical modelling to represent, analyse, make predictions, and provide insight into real-life situations		B: Fractions/Decimals/Percents C: Patterns, Variables & Equality E: Measurement (Metric System) F: Financial Literacy

21	E1 Financial Literacy: demonstrate the knowledge and skills needed to make informed financial decisions	B: Numbers & Operational Sense (+/-) Social Studies
22	Revisit and Reflect on SELs & Mathematical Processes	A B, C, D, E or F
Reflect Week	Celebrating my Mathematicians!	A B, C, D, E or F

Legend:

Headings & Boxes = Designed to build Reasoning by using contexts of strands to develop Spatial, Proportional and Algebraic Thinking

Expectations = Significant difference for the student (due to the shift from old to new curriculum) *especially for 2020/21 school year

Overall expectation that is supporting the learning but is not the main focus for those weeks