

Pacing Guide - Mathematics 9

Every September, teachers work hard to create a space that is safe and welcoming for all learners. The first weeks are a time to establish a sense of community, engage learners in rich interactive experiences to promote critical thinking and create opportunities for collaboration and discussion. This is an opportune time to develop a culture and a climate for mathematics learning, conducive to collaboration, risk taking and inquiry.

The following is a pacing guide for Mathematics 9, which provides an overview of the seven units. It is a reference tool to support teachers with the timing of yearlong learning. Teachers are encouraged to use their professional judgement and consider the needs of their students when planning for instruction. **For the purposes of planning your mathematics lessons, refer to the [Mathematics 9 curriculum document](#) and [Mathematics 9 Outcomes \(2022\)](#) that provides essential background information and describes learning opportunities and assessment tasks for each of the outcomes in the unit.**

****Notes:**

Former Unit 7: Similarity and Transformations (G02, G03, G04) 24 hours was removed

Former Unit 8: Circle Geometry (M01) 15 hours was removed

The Year at a Glance	
Unit # and Title	Unit Outcomes
Develop a Culture and Climate for Mathematics Learning (ongoing throughout each unit)	Nova Scotia's Inclusive Education Policy
Unit 1 Powers and Exponent Laws	N01, N04, N02
Unit 2 Rational Numbers	N03, N04
Unit 3 Square Roots and Surface Area	N05, N06, G01
Unit 4 Linear Relations	PR01, PR02
Unit 5 Polynomials	PR05, PR06, PR07
Unit 6 Linear Equations and Inequalities	PR03, PR04
Unit 7 Probability and Statistics (SP02 and SP04 removed)	SP01, SP03

Unit 1 Powers and Exponent Laws (approximately 21 hours)

Timeline	GCO/SCOs	Content / Assessment	Curriculum Document/ Supporting Resources
	Introductory Lesson	Course Outline/Formalizing Norms etc. Textbook walk through	Develop classroom norms <ul style="list-style-type: none"> Set tone for problem solving Develop various strategies/approaches for critical thinking and problem solving
September - October	Unit 1: Powers and Exponent Laws Number: Students will be expected to develop number sense N01 Students will be expected to demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents. [C, CN, PS, R] N02 Students will be expected to demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents. [C, CN, PS, R, T] N04 Students will be expected to explain and apply the order of operations, including exponents, with and without technology. [PS, T]	Assessing Prior Knowledge (ongoing throughout the unit)	Curriculum Document N01, N02, N04 ProGuide: Launch
		What is a Power?	Curriculum Document: N01 ProGuide/Student Text: section 2.1
		Powers of Ten and the Zero Exponent	Curriculum Document: N01 ProGuide/Student Text: section 2.2
		Order of Operations with Powers	Curriculum Document: N04 ProGuide/Student Text: section 2.3 Student Text: Start Where You Are: What Strategy Could I try? pp.70 Student Text: Game Operation Target Practice p.72
		Review and Assessment	Curriculum Document Mid-Unit Review: Student Text: p. 69
		Exponent Laws 1	Curriculum Document: N02 ProGuide/Student Text: section 2.4
		Exponent Laws 2	Curriculum Document: N02 Student Text: section 2.5
		Reinforcement, Consolidation and Assessment	Curriculum Document Student Text: Study Guide and Review p. 86–89 Student Text: Practice Test p.90 ProGuide: Unit 2 Test CD: Extra Practice & Test Generator Student Text: Unit Problem: How Thick is a Pile of Paper p. 91

Unit 2 Rational Numbers (approximately 21 hours)

Timeline	GCO/SCOs	Content / Assessment	Curriculum Document/ Supporting Resources
October - November	Unit 2: Rational Numbers Number: Students will be expected to develop number sense N03 Students will be expected to demonstrate an understanding of rational numbers by comparing and ordering rational numbers and solving problems that involve arithmetic operations on rational numbers. [C, CN, PS, R, T, V] N04 Students will be expected to explain and apply the order of operations, including exponents, with and without technology. [PS, T]	Assessing Prior Knowledge (ongoing throughout the unit)	Curriculum Document: N03, N04 ProGuide: Launch Student Text: Start Where You Are: How Can I Learn From Others? pp. 104–105
		What Is a Rational Number?	Curriculum Document: N03 ProGuide/Student Text: section 3.1
		Adding Rational Numbers	Curriculum Document: N03 ProGuide/Student Text: section 3.2
		Subtracting Rational Numbers	Curriculum Document: N03 ProGuide/Student Text: section 3.3
		Review and Assessment	Curriculum Document Student Text: Game: Closest to Zero p. 122 Mid-Unit Review: Student Text: p. 121
		Multiplying Rational Numbers	Curriculum Document: N03 ProGuide/Student Text: section 3.4
		Dividing Rational Numbers	Curriculum Document: N03 ProGuide/Student Text: section 3.5
		Order of Operations with Rational Numbers	Curriculum Document: N04 ProGuide/Student Text: section 3.6
		Reinforcement, Consolidation and Assessment	Curriculum Document Student Text: Study Guide and Review p.143–145 Student Text: Practice Test p.146 ProGuide: Unit 3 Test CD: Extra Practice & Test Generator ProGuide/Student Text: Unit Problem: Investigating Temperature Data – Student Text: p. 147; ProGuide Unit 3: p. 57

Unit 3: Square Roots and Surface Area (approximately 19 hours)

Timeline	GCO/SCOs	Content / Assessment	Curriculum Document/ Supporting Resources
November - January	Unit 3: Square Roots and Surface Area Number: Students will be expected to develop number sense Geometry: 3-D Objects and 2-D Shapes: Students will be expected to describe the characteristics of 3-D objects and 2-D shapes and analyze the relationships among them. N05 Students will be expected to determine the exact square root of positive rational numbers. [C, CN, PS, R, T] N06 Students will be expected to determine an approximate square root of positive rational numbers. [C, CN, PS, R, T] G01 Students will be expected to determine the surface area of composite 3-D objects to solve problems. [C, CN, PS, R, V]	Assessing Prior Knowledge (ongoing throughout the unit)	Curriculum Document: N05, N06, G01 ProGuide: Launch Student Text: Start Where You Are: How Can I Begin? pp. 22–23 Student Text: Project: Making Squares into Cubes p.2
		Square Roots of Perfect Squares	Curriculum Document: N05 ProGuide/Student Text: section 1.1
		Squares Roots of Non-Perfect Squares	Curriculum Document: N06 ProGuide/Student Text: section 1.2
		Review and Assessment	Curriculum Document Mid-Unit Review: Student Text: p. 21
		Surface Areas of Objects Made from Right Rectangular Prisms	Curriculum Document: G01 ProGuide/Student Text: section 1.3
		Surface Areas of Other Composite Objects	ProGuide/Student Text: section1.4
		Reinforcement, Consolidation and Assessment	Curriculum Document Student Text: Study Guide and Review p. 44–47 Student Text: Practice Test p.48 Student Text: Unit 1 Test CD: Extra Practice & Test Generator ProGuide/Student Text: Unit Problem: Design a Play Structure – Student Text: p. 49; ProGuide: p. 47
		Cumulative Review	Student Text: pp. 148-149

Unit 4: Linear Relations (approximately 21 hours)

Timeline	GCO/SCOs	Content / Assessment	Curriculum Document/ Supporting Resources
January - February	Unit 4: Linear Relations Patterns: Students will be expected to use patterns to describe the world and solve problems. Variables and Equations: Students will be expected to represent algebraic expressions in multiple ways. PR01 Students will be expected to generalize a pattern arising from a problem-solving context using a linear equation and verify by substitution. [C, CN, PS, R, V] PR02 Students will be expected to graph a linear relation, analyze the graph, and interpolate or extrapolate to solve problems. [C, CN, PS, R, T, V]	Assessing Prior Knowledge (ongoing throughout the unit)	Curriculum Document: PR01, PR02 ProGuide: Launch ProGuide DVD: Master 4.28 Student Text: Start Where You Are: How Can I Explain My Thinking? pp. 152–153
		Writing Equations to Describe Patterns	Curriculum Document: PR01 ProGuide/Student Text: section 4.1 Student Text: Technology: Table of Values and Graphing p. 163
		Linear Relations	Curriculum Document: PR02 ProGuide/Student Text: section 4.2 Student Text: Game: What's My Point? p. 182
		Another Form of the Equation for a Linear Relation	Curriculum Document: PR02 ProGuide/Student Text: section 4.3
		Review and Assessment	Curriculum Document Mid-Unit Review: Student Text: p. 181
		Matching Equations and Graphs	Curriculum Document: PR02 ProGuide/Student Text: section 4.4
		Using Graphs to Estimate Values	Curriculum Document: PR02 ProGuide/Student Text: section 4.5 Student Text: Technology: Interpolating and Extrapolating p. 199
		Reinforcement, Consolidation and Assessment	Curriculum Document Student Text: Study Guide and Review pp. 200–203 Student Text: Practice Test pg. 204 ProGuide: Unit 4 Test CD: Extra Practice & Test Generator ProGuide/Student Text: Unit Problem: Predicting Music Trends – Student Text: p. 205; ProGuide Unit 4: p. 57

Unit 5: Polynomials (approximately 22 hours)

Timeline	GCO/SCOs	Content / Assessment	Curriculum Document/ Supporting Resources
February - March	Unit 5: Polynomials Patterns: Students will be expected to use patterns to describe the world and solve problems. Variables and Equations: Students will be expected to represent algebraic expressions in multiple ways. PR05 Students will be expected to demonstrate an understanding of polynomials (limited to polynomials of degree less than or equal to two). [C, CN, R, V] PR06 Students will be expected to model, record, and explain the operations of addition and subtraction of polynomial expressions, concretely, pictorially, and symbolically (limited to polynomials of degree less than or equal to two). [C, CN, PS, R, V] PR07 Students will be expected to model, record, and explain the operations of multiplication and division of polynomial expressions, concretely, pictorially, and symbolically (limited to polynomials of degree less than or equal to two). [C, CN, R, V]	Assessing Prior Knowledge (ongoing throughout the unit)	Curriculum Document: PR05, PR06, PR07 ProGuide: Launch
		Modelling Polynomials	Curriculum Document: PR05 ProGuide/Student Text: section 5.1
		Like Terms and Unlike Terms	Curriculum Document: PR06 ProGuide/Student Text: section 5.2
		Adding Polynomials	Curriculum Document: PR05, PR06 ProGuide/Student Text: section 5.3
		Subtracting Polynomials	Curriculum Document: PR05, PR06 ProGuide/Student Text: section 5.4
		Review and Assessment	Curriculum Document Student Text: Start Where You Are: How Can I Summarize What I have Learned? pp. 238–239 Mid-Unit Review: Student Text: p. 237 Student Text: Game Investigating Polynomials that Generate Prime Numbers p. 240
		Multiplying and Dividing a Polynomial by a Constant	Curriculum Document: PR07 ProGuide/Student Text: section 5.5
		Multiplying and Dividing a Polynomial by a Monomial	Curriculum Document: PR07 ProGuide/Student Text: section 5.6
		Reinforcement, Consolidation and Assessment	Curriculum Document Student Text: Study Guide and Review pp. 258–261 Student Text: Practice Test p.262 ProGuide: Unit 5 Test CD: Extra Practice & Test Generator Student Text: Unit Problem: Algebra Patterns on a 100-Chart p. 263

Unit 6: Linear Equations and Inequalities (approximately 23 hours)

Timeline	GCO/SCOs	Content / Assessment	Curriculum Document/ Supporting Resources
April - May	Unit 6: Linear Equations and Inequalities Patterns: Students will be expected to use patterns to describe the world and solve problems. Variables and Equations: Students will be expected to represent algebraic expressions in multiple ways. PR03 Students will be expected to model and solve problems, where $a, b, c, d, e,$ and f are rational numbers, using linear equations. [C, CN, PS, V] PR04 Students will be expected to explain and illustrate strategies to solve single variable linear inequalities with rational coefficients within a problem-solving context. [C, CN, PS, R, V]	Assessing Prior Knowledge (ongoing throughout the unit)	Curriculum Document: PR03, PR04 ProGuide: Launch
		Modelling Solving Equations by Using Inverse Operations	Curriculum Document: PR03 ProGuide/Student Text: section 6.1
		Solving Equations by Using Balance Strategies	Curriculum Document: PR03 ProGuide/Student Text: section 6.2
		Review and Assessment	Curriculum Document Student Text: Game: Equation Persuasion p.287 Mid-Unit Review: Student Text: p.286
		Introduction to Linear Inequalities	Curriculum Document: PR04 ProGuide/Student Text: section 6.3
		Solving Linear Inequalities by Using Addition and Subtraction	Curriculum Document: PR04 ProGuide/Student Text: section 6.4
		Solving Linear Inequalities by Using Multiplication and Division	Curriculum Document: PR04 ProGuide/Student Text: section 6.5
		Reinforcement, Consolidation and Assessment	Curriculum Document Student Text: Study Guide and Review pp. 307–309 Student Text: Practice Test p. 310 ProGuide: Unit 6 Test CD: Extra Practice & Test Generator Student Text: Unit Problem: Raising Money for the Pep Club p. 311
		Cumulative Review	Student Text: pp. 312-313

Unit 7 Statistics and Probability (approximately 18 hours)

****Note:** SP02 and SP04 were removed

SP02: Students will be expected to select and defend the choice of using either a population or a sample of a population to answer a question.

SP04: Students will be expected to demonstrate an understanding of the role of probability in society.

Timeline	GCO/SCOs	Content / Assessment	Curriculum Document/ Supporting Resources
May - June	Unit 9 Statistics and Probability Data Analysis: Students will be expected to collect, display, and analyze data to solve problems. Uncertainty: Students will be expected to use experimental or theoretical probabilities to represent and solve problems involving uncertainty. SP01 Students will be expected to describe the effect on the collection of data of bias, use of language, ethics, cost, time and timing, privacy, and cultural sensitivity. [C,CN, R,T] SP03 Students will be expected to develop and implement a project plan for the collection, display, and analysis of data by formulating a question for investigation choosing a data collection method that includes social considerations selecting a population or a sample collecting the data displaying the collected data in an appropriate manner drawing conclusions to answer the question [C, PS, R, T, V]	Assessing Prior Knowledge (ongoing throughout the unit)	Curriculum Document: SP01, SP03 ProGuide: Launch
		Potential Problems with Collecting Data	Curriculum Document: SP01 ProGuide/Student Text: section 9.2
		Review and Assessment	Curriculum Document Student Text: Technology: Using Census at School pp. 442–443 Mid-Unit Review: Student Text: p. 444
		Displaying Data	Student Text: Technology: Using Spreadsheets and Graphs to Display Data p. 450–451
		Designing a Project Plan	Curriculum Document: SP03 ProGuide/Student Text: section 9.5
		Reinforcement, Consolidation and Assessment	Curriculum Document Student Text: Study Guide and Review pp. 457–459 (omit #10-12) Student Text: Practice Test p. 460 (omit #4, 5) CD: Extra Practice & Test Generator Student Text: Unit Problem: What Can You Discover about the World around You? p. 461
		Cumulative Review	