

Grade Nine – Suggested Math Instructional Resources



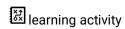
Number Sense

(The principles and processes underlying operations with <u>numbers</u> apply equally to algebraic situations and can be described and analyzed.)

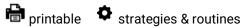
Curricular Content	Curricular Competencies (The student can)	Online Resources	Print Resources (all resources are available in the DLC or in schools)
Exponents and exponent laws with whole number exponents	Represent exponent as a repeated multiplication. Estimate square root numbers that are imperfect squares (eg. square root of 28 is between 5 and 6.) Explain and justify how to simplify exponents using exponent laws	Exponential Functions - Desmos Laws of Exponents Open Middle Activities	Radical Math (Felling, 2021) • Exponents and Radicals (p. 54-56) Elementary and Middle School Mathematics (Van de Walle, 2022) • pp. 591 - 601
Polynomials	State number as a product of its prime factor Define terminology (variables, degree, number of terms, coefficients, constant, monomial, binomial, trinomial, like terms, unlike terms, descending order/power) Represent polynomials using concrete, pictorial and symbolic forms	Polynomials - Desmos What are Polynomials	Radical Math (Felling, 2021) • Polynomials and Their Operations (pp. 57-65) Algebraic Thinking (Fullerton, 2020) • pp. 204 - 208

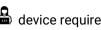












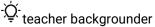


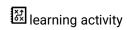
Computational Fluency

(Computational <u>fluency</u> and flexibility with numbers extend to operations with rational numbers.)

Curricular Content	Curricular Competencies (The student can)	Online Resources	Print Resources (all resources are available in the DLC or in schools)
Operations with rational numbers	Use a variety of strategies to simplify operations involving adding, subtracting, multiplying and dividing rational numbers, including brackets, exponents and signs.	Adding and Subtracting Integers Multiplying and Dividing Integers Open Middle Activities	Radical Math (Felling, 2021) Order of Operations (pp.40-53) Elementary and Middle School Mathematics (Van de Walle, 2022) Chapter 15 (pp. 367 – 398) Number Talks: Fractions, Decimals and Percentages (Parrish) Ch. 6 Addition (pp. 135 – 178) Ch. 7 Subtraction (pp. 179 – 218) Ch. 8 Subtraction (pp. 219 – 272) Ch. 9 Subtraction (pp. 273 – 315) Proportional Reasoning (Fullerton) Addition & Subtraction (pp. 135 – 153) Multiplication & Division (pp. 239 – 251)

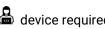






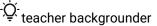


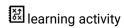






Curricular Content	Curricular Competencies (The student can)	Online Resources	Print Resources (all resources are available in the DLC or in schools)
Polynomials	and hinomial factors	Polynomials - Desmos The Distributive Property	Algebraic Thinking (Fullerton, 2020) • pp. 205 - 248
	Use a variety of strategies and models to add, subtract, multiply, divide and simplify polynomials	Open Middle Activities	













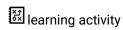
Patterning

(Continuous linear relationships can be identified and represented in many connected ways to identify regularities and make generalizations.)

Two-Variable linear relations	Represent on a graph (eg. y=mx+b) Use a graph to answer questions using interpolation or extrapolation. Demonstrate understanding that a cartesian plane is a relationship between two number lines or sets of values, including quadrants Determine whether values on a table represent a linear relation Use substitution to solve for a variable. Example, if x = 2, what does y equal in the equation y=2x+3 Construct a table of values given the equation and graph.	Which One Doesn't Belong Mathematical Mindsets Algebra	Algebraic Thinking (Fullerton, 2020) • pp. 129 - 204
Multi-step one variable linear equations	Recognize a linear equation Communicate solutions pictorially and symbolically Solve and verify linear equations using multiple strategies and models	Two-Step Equations Open Middle Activities Interactive Simulation Lesson Series	Algebraic Thinking (Fullerton, 2020) • pp. 129 - 204

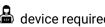














General Resources

General Strategies and Routines	 Which One Doesn't Belong Dot Card and Number Talks Number Talk Images Interactive Simulations 	Esti-Mysteries The Estimation Clipboard Cube Conversations Puzzles, Problems and Tasks	Week of Inspirational Math Building Thinking Classrooms Estimation Math Applications
Building Our Understanding	Surrey Video Series	Spiraling the Curriculum Progression of Fractions	Progression of Multiplication Progression of Division
Classroom Assessment			- Assessing Curricular Competencies
Indigenous Connections	- Coast Metro Math Project	When Seagull Stole the Sun	-Ç- BC Numeracy Network
Planning		- Critical Concepts Map	Planning - Year, Week, Day

Focusing on the content areas of number sense and computational fluency in this document is intentional as these are foundational skills that can be spiraled throughout the rest of the content standards while being grounded in the curricular competencies.



