






Grade Nine – Suggested Math Instructional Resources









Access Digital copy
here.

(The principles and processes underlying operations with [numbers](#) 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	<p>Represent exponent as a repeated multiplication.</p> <p>Estimate square root numbers that are imperfect squares (eg. square root of 28 is between 5 and 6.)</p> <p>Explain and justify how to simplify exponents using exponent laws</p>	<p> Exponential Functions - Desmos</p> <p> Laws of Exponents</p> <p> Open Middle Activities</p>	<p><i>Radical Math</i> (Felling, 2021)</p> <ul style="list-style-type: none"> Exponents and Radicals (p. 54-56) <p><i>Elementary and Middle School Mathematics</i> (Van de Walle, 2022)</p> <ul style="list-style-type: none"> pp. 591 - 601
Polynomials	<p>State number as a product of its prime factor</p> <p>Define terminology (variables, degree, number of terms, coefficients, constant, monomial, binomial, trinomial, like terms, unlike terms, descending order/power)</p> <p>Represent polynomials using concrete, pictorial and symbolic forms</p>	<p> Polynomials - Desmos</p> <p> What are Polynomials</p>	<p><i>Radical Math</i> (Felling, 2021)</p> <ul style="list-style-type: none"> Polynomials and Their Operations (pp. 57-65) <p><i>Algebraic Thinking</i> (Fullerton, 2020)</p> <ul style="list-style-type: none"> pp. 204 - 208

Computational Fluency

(Computational [fluency](#) 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.	<p> Adding and Subtracting Integers</p> <p> Multiplying and Dividing Integers</p> <p> Open Middle Activities</p>	<p><i>Radical Math</i> (Felling, 2021)</p> <ul style="list-style-type: none"> Order of Operations (pp.40-53) <p><i>Elementary and Middle School Mathematics</i> (Van de Walle, 2022)</p> <ul style="list-style-type: none"> Chapter 15 (pp. 367 – 398) <p>Number Talks: Fractions, Decimals and Percentages (Parrish)</p> <ul style="list-style-type: none"> Ch. 6 Addition (pp. 135 – 178) Ch. 7 Subtraction (pp. 179 – 218) Ch. 8 Subtraction (pp. 219 – 272) Ch. 9 Subtraction (pp. 273 – 315) <p>Proportional Reasoning (Fullerton)</p> <ul style="list-style-type: none"> Addition & Subtraction (pp. 135 – 153) Multiplication & Division (pp. 239 – 251)
Polynomials	<p>Apply distributive law/property to multiplying and dividing expressions involving monomial and binomial factors.</p> <p>Use a variety of strategies and models to add, subtract, multiply, divide and simplify polynomials</p>	<p> Polynomials - Desmos</p> <p> The Distributive Property</p> <p> Open Middle Activities</p>	<p><i>Algebraic Thinking</i> (Fullerton, 2020)</p> <ul style="list-style-type: none"> pp. 205 - 248

Patterning


























 video
  teacher backgrounder
  learning activity
  printable
  strategies & routines
  device required

Adapted from Richmond School District and Nanaimo Ladysmith Public Schools (with permission and gratitude)

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

<p>Two-Variable linear relations</p>	<p>Represent on a graph (eg. $y=mx+b$)</p> <p>Use a graph to answer questions using interpolation or extrapolation.</p> <p>Demonstrate understanding that a cartesian plane is a relationship between two number lines or sets of values, including quadrants</p> <p>Determine whether values on a table represent a linear relation</p> <p>Use substitution to solve for a variable. Example, if $x = 2$, what does y equal in the equation $y=2x+3$</p> <p>Construct a table of values given the equation and graph.</p>	<p> Which One Doesn't Belong</p> <p> Mathematical Mindsets Algebra</p>	<p><i>Algebraic Thinking</i> (Fullerton, 2020)</p> <ul style="list-style-type: none"> pp. 129 - 204
<p>Multi-step one variable linear equations</p>	<p>Recognize a linear equation</p> <p>Communicate solutions pictorially and symbolically</p> <p>Solve and verify linear equations using multiple strategies and models</p>	<p> Two-Step Equations</p> <p> Open Middle Activities</p> <p> Interactive Simulation</p> <p> Lesson Series</p>	<p><i>Algebraic Thinking</i> (Fullerton, 2020)</p> <ul style="list-style-type: none"> 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  Concreteness Fading	 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	 BC Numeracy Network
Planning	 BCMath	 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.