

WNCP B.C.MATHEMATICS AT A GLANCE OVERVIEW – GRADE 9

Mathematical Processes

C = Communication
R = Reasoning

PS = Problem Solving
CN = Connections

V = Visualization
T = Technology

ME = Mental Mathematics and Estimation

STRAND: NUMBER		Mathematical Processes
General Outcome: Develop number sense		
<i>It is expected that students will:</i>		
A1	Demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by: (a) representing repeated multiplication using powers (b) using patterns to show that a power with an exponent of zero is equal to one (c) solving problems involving powers.	C CN PS R
A2	Demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents.	C CN PS R T
A3	Demonstrate an understanding of rational numbers by: (a) comparing and ordering rational numbers (b) solving problems that involve arithmetic operations on rational numbers.	C CN PS R V T
A4	Illustrate and explain the order of operations including exponents, with and without technology.	PS T
A5	Determine the square root of positive rational numbers that are perfect squares.	C CN PS R T
A6	Determine an approximate square root of positive rational numbers that are non-perfect squares.	C CN PS R T

STRAND: STATISTICS & PROBABILITY (DATA ANALYSIS)		Mathematical Processes
General Outcome: Collect, display and analyze data to solve problems.		
D1	Describe the effect of: (a) bias (b) use of language (c) ethics (d) cost (e) time and timing (f) privacy (g) cultural sensitivity on the collection of data.	C CN R T
D2	Select and defend the choice of using either a population or a sample of a population to answer a question.	C CN PS R
D3	Develop and implement a project plan for the collection, display and analysis of data by: (a) formulating a question for investigation (b) choosing a data collection method that includes social considerations (c) selecting a population or a sample (d) collecting the data (e) displaying the collected data in an appropriate manner (f) drawing conclusions to answer the question.	C PS R V T
STRAND: STATISTICS & PROBABILITY (CHANCE & UNCERTAINTY)		Mathematical Processes
General Outcome: Use experimental or theoretical probabilities to represent and solve problems involving uncertainty.		
D4	Demonstrate an understanding of the role of probability in society.	C CN R T

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STRAND: PATTERNS AND RELATIONS (PATTERNS)		Mathematical Processes
General Outcome: Use patterns to describe the world and solve problems.		
B1	Generalize a pattern arising from a problem-solving context using linear equations and verify by substitution.	C CN PS R V
B2	Graph linear relations, analyze the graph and interpolate or extrapolate to solve problems.	C CN PS R V T
STRAND: PATTERNS & RELATIONS (VARIABLES & EQUATIONS)		Mathematical Processes
General Outcome: Represent algebraic expressions in multiple ways.		
B3	Model and solve problems using linear equations of the form: (a) $ax = b$ (b) $\frac{x}{a} = b, a \neq 0$ (c) $ax + b = c$ (d) $\frac{x}{a} + b = c, a \neq 0$ (e) $ax = b + cx$ (f) $a(x + b) = c$ (f) $ax + b = cx + d$ (g) $a(bx + c) = d(ex + f)$ (h) $\frac{a}{x} = b, x \neq 0$ where a, b, c, d, e and f are rational numbers.	C CN PS V
B4	Explain and illustrate strategies to solve single variable linear inequalities with rational coefficients within a problem-solving context.	C CN PS R V
B5	Demonstrate an understanding of polynomials (limited to polynomials of degree less than or equal to 2).	C CN R V
B6	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 2).	C CN PS R V
B7	Model, record and explain the operations of multiplication and division of polynomial expressions (limited to polynomials of degree less than or equal to 2) by monomials, concretely, pictorially and symbolically.	C CN R V

STRAND: SHAPE AND SPACE (MEASUREMENT)		Mathematical Processes
General Outcome: Use direct or indirect measurement to solve problems.		
C1	Solve problems and justify the solution strategy using circle properties, including: (a) the perpendicular from the centre of a circle to a chord bisects the chord (b) the measure of the central angle is equal to twice the measure of the inscribed angle subtended by the same arc (c) the inscribed angles subtended by the same arc are congruent (d) a tangent to a circle is perpendicular to the radius at the point of tangency.	C CN PS R V T
STRAND: SHAPE AND SPACE (3-D OBJECTS & 2-D SHAPES)		Mathematical Processes
General Outcome: Describe the characteristics of 3-D objects and 2-D shapes, and analyze the relationships among them.		
C2	Determine the surface area of composite 3-D objects to solve problems.	C CN PS R V
C3	Demonstrate an understanding of similarity of polygons.	C CN PS R V
STRAND: SHAPE AND SPACE (TRANSFORMATIONS)		Mathematical Processes
General Outcome: Describe and analyze position and motion.		
C4	Draw and interpret scale diagrams of 2-D shapes.	CN R V T
C5	Demonstrate an understanding of line and rotation symmetry.	C CN PS V