**[C]** Communication **[PS]** Problem Solving **[CN]** Connections **[R]** Reasoning

**[ME]** Mental Mathematics **[V]** Visualization and Estimation **[T]** Technology

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| **Number Strand**  |
| **Student Learning Outcome**  | **Math Makes Sense**  |
| **N9.1**Demonstrate an understanding of powers with integral bases (excluding base 0) and whole number exponents by: * representing repeated multiplication using powers
* using patterns to show that a power with an exponent of zero is equal to one
* solving problems involving powers

[C,CN,PS,R,T] | Unit 2, Lesson 2.1, pp. 52–57Unit 2, Lesson 2.2, pp. 58–62Unit 2, Unit Problem, p. 91 |
| **N9.1**Demonstrate an understanding of operations on powers with integral bases (excluding base 0) and whole number exponents. [C,CN,PS,R,T] | Unit 2, Lesson 2.4, pp. 73–78Unit 2, Lesson 2.5, pp. 79–85 |
| **N9.2**Demonstrate understanding of rational numbers including:* Comparing and ordering
* Relating to other types of numbers
* Solving situational questions

[C,CN,PS,R,T,V] | Unit 3, Lesson 3.1, pp. 94–103Unit 3, Lesson 3.2, pp. 106–113Unit 3, Lesson 3.3, pp. 114–120Unit 3, Game, p. 122Unit 3, Lesson 3.4, pp. 123–129Unit 3, Lesson 3.5, pp. 130–136Unit 3, Unit Problem, p. 147 |
| **N9.2**Explain and apply the order of operations, including exponents, with and without technology.[C,CN,PS,R,T,V] | Unit 2, Lesson 2.3, pp. 63–68Unit 2, Game, p. 72Unit 3, Lesson 3.6, pp. 137–142Unit 3, Unit Problem, p. 147 |
| **N9.3** Extend understanding square roots to include the square root of positive rational numbers.[CN,ME,R,T,V] | Unit 1, Lesson 1.1, pp. 6–13Unit 1, Lesson 1.2, pp. 14-20Unit 1, Game, p. 24 |

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|  **Patterns and Relations Strand** |
| **Student Learning Outcome**  | **Math Makes Sense**  |
| **P9.1** Demonstrate understanding of linear relations including:* graphing
* analyzing
* interpolating and extrapolating
* solving situational questions.

[C, CN, PS, R, T, V] | Unit 4, Lesson 4.1, pp. 154–162Unit 4, Technology Lesson, p. 163Unit 4, Lesson 4.2, pp. 164–173Unit 4, Lesson 4.3, pp. 174–180Unit 4, Game, p. 182Unit 4, Lesson 4.4, pp. 183–190Unit 4, Lesson 4.5, pp. 191–198Unit 4, Technology Lesson, p. 199Unit 4, Unit Problem, p. 205 |
| **P9.2** Model and solve situational questions using linear equations of the form:*
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where a, b, c, d, e, and f are rational numbers.[C,CN,PS,V] | Unit 6, Lesson 6.1, pp. 266–274; Unit 6, Lesson 6.2, pp. 275–283; Unit 6, Game, p. 287; Unit 6, Unit Problem, p. 311 |
| **P9.3** Demonstrate understanding of single variable linear inequalities with rational coefficients including: * solving inequalities
* verifying
* comparing
* graphing.

[C, CN, PS, R, V] | Unit 6, Lesson 6.3, pp. 288–293; Unit 6, Lesson 6.4, pp. 294–299; Unit 6, Lesson 6.5, pp. 300–306; Unit 6, Unit Problem, p. 311 |
| **P9.4** Demonstrate understanding of polynomials (limited to polynomials of degree less than or equal to 2) including:* modeling
* generalizing strategies for addition, subtraction, multiplication, and division
* analyzing
* relating to context
* comparing for equivalency.

[C, CN, R, V] | Unit 5, Lesson 5.1, pp. 210–216; Unit 5, Lesson 5.2, pp. 217–224; Unit 5, Game, p. 240 Unit 5, Lesson 5.3, pp. 225–230; Unit 5, Lesson 5.4, pp. 231–236; Unit 5, Unit Problem, p. 263Unit 5, Lesson 5.5, pp. 241–248; Unit 5, Lesson 5.6, pp. 249–257 |

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| **Shape and Space Strand** |
| **Student Learning Outcome**  | **Math Makes Sense**  |
| **SS9.1** Demonstrate understanding of circle properties including: * perpendicular line segments from the centre of a circle to a chord bisect the chord
* inscribed angles subtended by the same arc have the same measure
* the measure of a central angle is twice the measure of an inscribed angle subtending the same arc
* tangents to a circle are perpendicular to the radius ending at the point of tangency.

[C, CN, PS, R, T, V] | Unit 8, Lesson 8.1, pp. 384–391; Unit 8, Lesson 8.2, pp. 392–399; Unit 8, Technology Lesson, pp. 400, 401; Unit 8, Game, p. 402; Unit 8, Lesson 8.3, pp. 404–412; Unit 8, Technology Lesson, pp. 413, 414; Unit 8, Unit Problem, p. 421 |
| **SS9.2** Extend understanding of area to surface area of right rectangular prisms, right cylinders, right triangular prisms, and composite 3-D objects.[CN,PS,R,V] | Unit 1, Lesson 1.3, pp. 25–32; Unit 1, Lesson 1.4, pp. 33–43; Unit 1, Unit Problem, p. 49 |
| **SS9.3** Demonstrate understanding of similarity of 2-D shapes.[C,CN,PS,R,V] | Unit 7, Lesson 7.1, pp. 318–324; Unit 7, Lesson 7.2, pp. 325–331; Unit 7, Technology Lesson, pp. 332, 333; Unit 7, Lesson 7.3, pp. 334–342; Unit 7, Lesson 7.4, pp. 343–351Unit 7, Unit Problem, p. 381 |
| **SS9.4** Demonstrate an understanding of line and rotation symmetry.[C,CN,PS,V] | Unit 7, Lesson 7.5, pp. 353–359; Unit 7, Game, p. 360; Unit 7, Lesson 7.6, pp. 361–367; Unit 7, Lesson 7.7, pp. 368–375; Unit 7, Unit Problem, p. 381 |

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| **Statistics and Probability Strand** |
| **Student Learning Outcome**  | **Math Makes Sense**  |
| **SP9.1** Demonstrate understanding of the effect of:* bias
* use of language
* ethics
* cost
* time and timing
* privacy
* cultural sensitivity and
* population or sample

on data collection.[C, PS, R, T] | Unit 9, Lesson 9.2, pp. 431–436; Unit 9, Technology Lesson, pp. 442, 443Unit 9, Lesson 9.3, pp. 437–441; Unit 9, Lesson 9.4, pp. 445–449 |
| **SP9.2** Demonstrate an understanding of the collection, display, and analysis of data through a project.[C,PS,R,T,V] | Unit 9, Technology Lesson, pp. 442, 443; Unit 9, Technology Lesson, pp. 450, 451; Unit 9, Lesson 9.5, pp. 454–456; Unit 9, Unit Problem, p. 461 |
| **SP9.3** Demonstrate an understanding of the role of probability in society. [C, CN, R, T] | Unit 9, Lesson 9.1, pp. 424–429; Unit 9, Game, p. 430 |
| **SP9.4** Research and present how First Nations and Métis peoples, past and present, envision, represent, and make use of probability and statistics. |  |