

**Strand: Problem Solving**

<b>Objective</b>											
<i>P-1 establish and/or demonstrate an understanding of a problem by</i>											
i) considering alternate interpretations											
j) identifying assumptions											
<i>P-2 design a plan and solve problems using one or more of the following strategies</i>											
f) break problem into sub-problems											
g) recognize patterns											
P-3 apply estimation strategies to a problem											
<i>P-4 solve a variety of types of problems including</i>											
a) translation problems											
b) process problems											
c) realistic problems											
P-5 make appropriate use of technology in solving problems											
P-6 explain, orally and/or in written form, how the solution was obtained											
P-10 consider other ways to solve a problem											
P-11 display the results using a variety of means such as graphs, charts, or statements											

**Strand: Numbers and Operations**

<b>Objective</b>																			
N-5 round a number to the nearest c) thousand or hundredth d) thousandth																			
N-7 write equivalent expressions for a number c) as an expanded numeral using exponential notation positive, negative, and zero exponents) d) using scientific notation																			
N-8 convert to an equivalent one in decimal notation a number written in b) scientific notation																			
N-9 reason out and solve problems by applying the following mental calculation strategies g) adding, subtracting, or multiplying by chaining																			
N-10 estimate a sum, a difference, a product, or a quotient by a) reformulating b) compensating c) translating																			
N-14 estimate the square root of any whole number b) that is a multiple of 100																			
N-15 reason out and solve percent problems by applying the following mental calculation strategies a) using fractions to calculate percents b) using rules for conversion of percent to decimal and vice versa c) relating complex percents to more easily handled ones																			
N-26 use a divisibility rule to determine whether a number is divisible by b) 3, 6, 9 c) 4, 8																			
N-28 find the square root of any perfect square c) using prime factorization																			
N-30 evaluate expressions in a given base with a b) zero exponent																			

Highlighted objectives are those that have not been introduced or covered in any previous grade(s).



**Strand: Numbers and Operations**

<b>Objectives</b>											
N-70 use manipulatives, pictures, and symbols to compare and/or order rational numbers											
N-71 recognize that expressions like $-(2/3)$ , $-2/3$ , $(-2)/3$ , and $2/(-3)$ are all equivalent											
N-72 add and subtract rational numbers, including decimal numbers, using a) manipulatives and diagrams b) algorithms											
N-73 multiply and divide rational numbers using algorithms											
N-74 extend the procedures involving integers and positive rational numbers to operating on negative rational numbers											
N-75 evaluate a numerical expression containing rational numbers by performing operations in the correct order											
N-76 The student should be able to use a calculator to: add, subtract, multiply, and/or divide fractions											
N-77 add, subtract, multiply, and/or divide integers by using the +/- key											
N-80 find a product when the display cannot show the complete product because of the number of digits											
N-83 use the following special function keys b) percent, square root, ( ), $\pi$ , power, and $1/x$											

**Strand: Ratio and Proportion**

<b>Objectives</b>											
R-1 solve word problems involving rates and ratios											
R-4 construct ratios and rates from real-life examples											
R- 8 compare ratios and rates											
R-10 construct scale drawings											
R-15 rewrite as a decimal number, and vice versa, b)percents greater than 100											
c) percents less than 1											
R-17 convert a percent to a mixed number, and vice versa											
R-18 solve percent problems by writing the corresponding number sentence or proportion											
R-19 determine whether a given pair of ratios forms a proportion											
R-20 find the missing element in a proportion using b)the product of means and extremes											
R-21 solve real-life percent problems about c)percent increase and decrease											
d)compound interest, service charges											

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**Strand: Geometry/Measurement**

<b>Objectives</b>																			
G/M - 1 recognize, draw, name, and describe or define f)alternate interior angles, alternate exterior angles, transversal, corresponding angles, same side interior angles																			
g)chords, central angles, and secants of a circle, central angles, of a regular polygon																			
h)bisector of an angle, perpendicular bisector of a line segment																			
G/M-3 solve problems involving angles including those formed by parallel lines cut by a transversal																			
G/M-4 construct a line parallel to a given line through a point not on the line using paper folding, mira, and/or compass and straight edge																			
G/M-8 determine the measures of vertically opposite, supplementary, and complementary angles when one angle is given																			
G/M- 9 recognize that the sum of the interior angles of a triangle is equal to 180°, and the sum of the interior angles of a quadrilateral is 360°																			
G/M-10 calculate the value of an unknown angle in a triangle and in a quadrilateral, given the measures of the other angles																			
G/M-11 construct a line perpendicular to a given line from a point not on the line, or from a point on the line, using paper folding, mira, and/or compass and straight edge																			
G/M-12 construct the perpendicular bisector of a line segment, and the bisector of an angle, using paper folding, mira, and/or compass and straight edge																			
G/M-13 identify, name, give an example, and list the properties of the following figures b) isosceles trapezoid																			
G/M-15 construct parallelograms, rectangles, rhombuses, and squares using paper folding, mira, and/or compass and straight edge																			

**Strand: Geometry/Measurement**

<b>Objectives</b>																			
G/M-17 identify the relationships between the sides and between the angles of similar polygons																			
G/M-20 calculate the scale factor of two similar polygons																			
G/M-21 determine the missing side of similar triangles																			
G/M-22 solve problems involving similar triangles, and other similar polygons																			
G/M-23 create similar figures using a variety of tools such as grids, scale factors, photocopiers, pantographs, etc																			
G/M-26 construct congruent angles and congruent triangles using paper folding, mira, and/or compass and straight edge																			
G/M-40 draw representations of 3-dimensional objects																			
G/M-43 make similar 3-dimensional objects																			
G/M-52 use the Pythagorean Theorem to calculate the length of the third side of a right triangle																			
G/M-53 solve problems using the Pythagorean Theorem																			
G/M-58 solve a variety of problems involving area																			
G/M-64 estimate and find the area (using a formula) of the following figures																			
c) trapezoids, composite figures, circles																			
G/M-66 measure and calculate the surface area of a																			
b) cylinder, triangular prism																			
c) pyramid, composite solid																			
d) cone, sphere (given the formula)																			
G/M-67 recognize that for a given surface area, the volume of objects can vary and that for a given volume, the surface area can vary																			
G/M-68 convert metric units of area																			
G/M-70 solve a variety of problems involving volume																			
G/M-72 convert metric units of volume																			

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**Strand: Geometry/Measurement**

<b>Objectives</b>											
G/M-73 estimate, then calculate (using a formula) the volume of a b) triangular prism, cylinder											
c) pyramid, cone, composite solid											
d) sphere (given the formula)											
G/M-74 recognize and discuss the relationships between length, width, height, surface area, and volume of b) any prism or cylinder											
G/M-77 determine the effect on the volume of a solid of changing one or more of its dimensions											
G/M-79 solve a variety of problems involving capacity, mass, or time											
G/M-81 convert a variety of units c) 1 mL of water at 4°C has a volume of 1 cm <sup>3</sup> and a mass of 1 g											
d) 1 L of water at 4°C has a volume of 1 dm <sup>3</sup> and a mass of 1 kg											
e) 1000 L = 1 kL = 1 m <sup>3</sup>											
f) 1000 L of water at 4°C has a mass of 1000 kg = 1t											

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**Strand: Data Management**

<b>Objectives</b>													
D-6 discuss the appropriateness of locally collected data as opposed to data gathered from other sources													
D-7 identify the limits of student collected and published data													
D-9 display data using d) circle graphs (degrees and percents), stem-and-leaf plots e) box-and-whisker plots, scatter plots													
D-10 discuss and determine the most suitable method(s) to display data													
D-11 use computer software to assist in the organization and display of data													
D-12 select graphs that are misleading and state why													
D-14 discuss, interpret, and ascribe meaning to the organized data													
D-15 determine, from a set of data, the c) weighted mean													
D-16 determine the effect on the mean, median, or mode of a set of numbers when c) a significantly different number is included													
D-17 list a set of numbers given a mean, median, and/or mode													
D-18 read various charts and schedules, and use the information gained to solve problems													
D-19 analyze and interpret arguments or conclusions based on statistical information													
D-20 solve problems involving data management													
D-24 correctly use the terms experimental probability, theoretical probability, and chance													
D-26 simulate real situations by using manipulatives													
D-30 list the possible outcomes and favourable outcomes for a random experiment involving compound events													
D-31 calculate the probability of a compound event happening													

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**Strand: Data Management**

<b>Objectives</b>											
D-32 state that the experimental probability more closely approximates the theoretical probability as the number of cases increases											

**Strand: Algebra**

<b>Objectives</b>																			
A-2 evaluate an open expression, with one variable, using the following to replace the variable c) integers																			
d) rational numbers																			
A-3 evaluate an open expression, with two variables, using the following to replace the variables b) fractions and decimals																			
c) integers																			
d) rational numbers																			
A-5 solve word problems by using c) equations																			
A-6 solve equations, in one variable, using c) undoing																			
A-8 solve for the variable in a formula, using inverse operations																			
A-9 understand and use functions as b) ordered pairs																			
A-10 graph ordered pairs of numbers and tables of values on the coordinate plane b) in any quadrant																			
A-12 create a table of coordinates and the accompanying graph for a simple linear equation																			
A-13 determine if an ordered pair is a solution to a particular linear equation																			
A-14 display a relation as a set of ordered pairs, a mapping diagram, and a graph																			
A-15 understand and use correctly the terms b) polynomial, like terms, monomial, binomial, trinomial, degree, coefficient																			
A-16 use manipulatives to represent a polynomial																			
A-17 generate equivalent expressions by collecting like terms																			
A-18 add and subtract two polynomials																			
A-19 multiply and divide two monomials																			
A-20 multiply a polynomial by a monomial																			

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**Strand: Algebra**

<b>Objectives</b>											
A-21 multiply a binomial by a binomial											
A-22 divide a polynomial by a monomial											
A-23 solve and verify equations, in one variable, with variables on both sides of the equal sign											
A-24 solve and verify equations, in one variable, containing fraction or decimal coefficients											