**Mathematics 10**  Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Student Self-Assessment and Targeted Review**

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| **Measurement Unit:** Students will be expected to develop spatial sense and proportional reasoning. (Chapters 1 & 2) | **Targeted Resources** |
| **M01** Students will be expected to solve problems that involve linear measurement, using SI and imperial units of measure, estimation strategies, and measurement strategies.   * I can compare SI (e.g. cm, km) and imperial units (e.g. in, ft). * I can estimate a linear measurement using a personal referent (e.g. 1 cm is about the width of a fingertip). * I can solve word problems that involve linear measures. | p64 #3-5  p130 #1, 3  p458 #1 |
| **M02** Students will be expected to apply proportional reasoning to problems that involve conversions between SI and imperial units of measure.   * I can solve a problem that involves the conversion of units within or between SI and imperial systems and verify my solution using unit analysis. * I can justify, using mental math and estimation, that my solution to a conversion problem is reasonable. | p11 #10-13  p64 #6-8  p130 #2, 4, 5  Unit Analysis - p9 Example #3  Conversion with Unit Analysis  https://youtu.be/d5lcGCbV5cM |
| **M03** Students will be expected to solve problems, using SI and imperial units, that involve the surface area and volume of 3-D objects, including right cones, right cylinders, right prisms, right pyramids, and spheres.   * I can draw a picture to help me understand a problem that involves surface area or volume. * I can solve a problem involving the surface area, volume or dimensions of a cone, cylinder, prism, pyramid, or sphere, using an object or its picture. * I can solve a problem that involves surface area or volume, given a drawing of a composite 3-D object. | pp64-66 #9, 11, 15, 17, 20, 25, 26  p130 #6-13  p252 #1-3  p458 #2 |
| **M04** Students will be expected to develop and apply the primary trigonometric ratios (sine, cosine, tangent) to solve problems that involve right triangles.   * I can explain how sine, cosine and tangent are related to the sides of a right triangle. * I can solve a word problem that involves one or more right triangles using sine, cosine, tangent or the Pythagorean Theorem. * I know how a clinometer or metre stick can be used to solve a problem that involves direct or indirect measurements. | p131 #14-22  p252 #3-6  p458 #3, 4  p90 Construct Understanding  Trig Ratio: Tangent  https://youtu.be/cquWNuKTnQs |

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| **Algebra and Number Unit:** Students will be expected to develop algebraic reasoning and number sense. (Chapters 3 & 4) | **Targeted Resources** |
| **AN01** Students will be expected to demonstrate an understanding of factors of whole numbers by determining the prime factors, greatest common factor, least common multiple, square root, and cube root.   * I can determine the prime factors of a whole number. * I can determine the greatest common factor or least common multiple of a set of whole numbers, and explain the process. * I can determine the square/cube root of a perfect square/cube, and explain the process. | p198 #1-10  p252 #7-9  Prime Factors, GCF and LCM  http://bit.ly/1mhYXFU |
| **AN04** Students will be expected to demonstrate an understanding of the multiplication of polynomial expressions (limited to monomials, binomials, and trinomials), concretely, pictorially, and symbolically.   * I can model the multiplication of two given binomials, concretely or pictorially, and record the process symbolically. * I can multiply two polynomials symbolically, and combine like terms in the product. * I can identify and explain errors in a solution for a polynomial multiplication. | P200 #23-31  p252 #12  p253 #16, 17  p458 #5, 6 |
| **AN05** Students will be expected to demonstrate an understanding of common factors and trinomial factoring, concretely, pictorially, and symbolically.   * I can model the factoring of a trinomial (e.g. ), concretely or pictorially, and record the process symbolically. * I can identify and explain errors in a polynomial factorization. * I can generalize and explain strategies used to factor a trinomial. * I can express a polynomial as a product of its factors. | p199 #11-21  p200 #32-35  p252 #10, 11, 13, 14  p253 #15, 18  Factoring Trinomials  <http://bit.ly/1UiOpYq> |
| **AN02** Students will be expected to demonstrate an understanding of irrational numbers by representing, identifying, simplifying, and ordering irrational numbers.   * I can sort a set of numbers into rational and irrational numbers. * I can determine an approximate value of a given irrational number and place it on a number line. * I can express a radical as a mixed radical in simplest form or vice versa (e.g. ). | p253 #19-21  p458 #7 |
| **AN03** Students will be expected to demonstrate an understanding of powers with integral and rational exponents.   * I can explain, using patterns, why , a ≠ 0 and , n > 0. * I can apply the exponent laws to a variety of expressions, and explain my reasoning. * I can solve a word problem that involves exponent laws or radicals. | p253 #22-26  p458 #8  p459 #9 |

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| **Relations and Functions Unit:** Students will be expected to develop algebraic and graphical reasoning through the study of relations. (Chapters 5, 6 & 7) | **Targeted Resources** |
| **RF01** Students will be expected to interpret and explain the relationships among data, graphs, and situations.   * I can graph a set of data, and determine and correctly write the domain and range. * I can explain why data points should or should not be connected on the graph. * I can describe a possible situation for a given graph or sketch a possible graph for a given situation. | p326 #1, 2, 6, 7  p459 #12 |
| **RF02** Students will be expected to demonstrate an understanding of relations and functions.   * I can explain, using examples, why some relations are not functions but all functions are relations. * I can determine if a set of ordered pairs represents a function and explain my reasoning. | p326 #3  p327 #13  p459 #10 |
| **RF03** Students will be expected to demonstrate an understanding of slope with respect to rise and run, line segments and lines, rate of change, parallel lines, and perpendicular lines.   * I can determine the slope of a line segment and classify it as having a positive, negative, zero or undefined slope. * I can draw a line or determine another point on a line, given its slope and a point on the line. * I can determining whether two lines are parallel or perpendicular. * I can solve a word problem involving slope and explain slope as a rate of change. | p388 #1-9  p459 #13  p460 #18, 19  Slope from a Graph  http://bit.ly/1Cke0ch |
| **RF04** Students will be expected to describe and represent linear relations, using words, ordered pairs, tables of values, graphs, and equations.   * I can identify the independent and dependent variables in a word problem. * I can determine whether a situation, equation, graph or table of values represents a linear relation, and explain why or why not. * I can match corresponding representations of linear relations (i.e. graphs, tables of values, and equations.). | p327 #9, 10  p459 #11 |
| **RF05** Students will be expected to determine the characteristics of the graphs of linear relations, including the intercepts, slope, domain, and range.   * I can determine the intercepts, slope, and domain/range of the graph of a linear relation. * I can sketch a linear relation that has one intercept, two intercepts, or an infinite number of intercepts. * I can solve a word problem that involves intercepts, slope, domain, or range of a linear relation. | p328 #16-18  p460 #14, 16 |

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| **RF06** Students will be expected to relate linear relations to their graphs, expressed in: slope-intercept form (*y* = *mx* + *b*); general form (*Ax* + *By* + *C* = 0); or, slope-point form (*y – y1*) = *m*(*x – x1*)   * I can rewrite a linear relation in either slope-intercept or general form. * I can graph a linear relation given in slope-intercept, general, or slope-point form. * I can match a set of linear relations to their graphs. | p460 #15  p461 #21, 23, 24 Graph a Line using *y* = *mx* + *b* <https://youtu.be/p7Akva8z1TM>  Slope-Point Form  https://youtu.be/cWQ6sEmkjMU |
| **RF07** Students will be expected to determine the equation of a linear relation to solve problems, given a graph, a point and the slope, two points, and a point and the equation of a parallel or perpendicular line.   * I can determine the slope and *y*-intercept of a given linear relation from its graph, and write the equation in the form *y* = *mx* + *b*. * I can write the equation of a linear relation, using given information, and explain my reasoning. * I can graph linear data generated from a real-world situation, and write the equation of the resulting line. * I can determine the equation of the line of best fit from a scatterplot using technology (e.g. TI-84 LinReg) and determine the correlation (i.e. the *r* value). * I can solve a word problem using the equation of a line. | p460 #17, 20  p461 #22  **NS Curriculum Companion**  p28 #1-3  p31 #1-2  p32 #3-5  TI-84 LinReg and r  http://bit.ly/1wvN0Ph  Correlation Coefficient  http://guessthecorrelation.com/ |
| **RF08** Students will be expected to solve problems that involve the distance between two points and the midpoint of a line segment.   * I can determine the distance between two points. * I can determine the midpoint of a line segment, given the endpoints of the segment. * I can solve a word problem involving the distance between two points or midpoint of a line segment. | **NS Curriculum Companion**  **p19 #4-11**  p20 #12-21  p25 #4-11  p26 #12-22 |
| **RF09** Students will be expected to represent a linear function, using function notation.   * I can write the equation of a linear function in two variables, using function notation or vice versa. * I can determine the related range value, given a domain value for a linear function (e.g., if *f*(*x*) = 3*x* – 2, determine *f*(–1)) or vice versa (e.g., if *g*(*t*) = 7 + *t*, determine *t* so that *g*(*t*) = 15). * I can sketch the graph of a linear function given in function notation. | p272 #14-19  p326 #4-5  p327 #11  Function Notation  https://youtu.be/WET\_DLtmZiw |
| **RF10** Students will be expected to solve problems that involve systems of linear equations in two variables, graphically and algebraically.   * I can model a situation using a system of linear equations. * I can determine the solution of a system of linear equations graphically or algebraically. * I can explain, using examples, why a system of equations may have no solution, one solution, or an infinite number of solutions. * I can solve a word problem that involves a system of linear equations. | p461 #25-31  Systems of Equations  https://youtu.be/08RqExbdaWY |

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| **Financial Mathematics Unit:** Students will be expected to demonstrate number sense and critical thinking skills. (Financial Math Supplement) | **Targeted Resources** |
| **FM01** Students will be expected to solve problems that involve unit pricing and currency exchange, using proportional reasoning.   * I can compare the unit price of two or more given items. * I can solve problems that involve determining the best buy, and explain the choice in terms of the cost as well as other factors, such as quality and quantity. * I can determine the percent increase or decrease for a given original and new price. * I can solve a contextual problem that involves currency exchange. | **Financial Mathematics Unit**  **P82 #1-5**  **p85 #1, 2**  **p86 #8, 9** |
| **FM02** Students will be expected to demonstrate an understanding of income to calculate gross pay and net pay, including wages, salary, contracts, commissions, and piecework.   * I can identify and list jobs that commonly use different methods of earning income (e.g., hourly wage, wage and tips, salary, commission, contract, bonus, shift premiums) and describe the advantages and disadvantages for those methods. * I can determine gross pay from hours worked (wages) or earnings (commissions). * I can determine net pay by calculating the Canadian Pension Plan (CPP), Employment Insurance (EI), income tax and other deductions for a given gross pay. | **Financial Mathematics Unit**  **p83 #6-10**  **p84 #11, 12**  **p85 #3-7**  **p86 #10**  **p87 #11, 12, 14, 15** |
| **FM03** Students will be expected to investigate personal budgets.   * I can create a personal budget using income and expense data and explain how and why I made my budgeting decisions. * I can modify a budget to achieve a set of personal goals. | **Financial Mathematics Unit**  **p84 #13**  **p87 #13** |
| **FM04** Students will be expected to explore and give a presentation on an area of interest that involves financial mathematics.   * I can collect primary or secondary data (statistical or informational) related to my topic and use this data to create, analyze and solve a contextual problem. * I can organize and present my project. | **Financial Mathematics Unit**  p88 |