OUTCOMES	ASSESSMENT RUBRICS

FP. 10.1 Demonstrate understanding of factors of whole numbers by determining the: prime factors, greatest common factor, least common multiple, principal square root, cube root

Level / Criteria	Beginning — Spend some extra time with the criteria and ask for help.	Approaching — Good start. You are beginning to make sense of this on your own. You are consistent with the basic learning goals for this outcome.	Proficient — You did it and you did it on your own. You are able to complete the processes for this outcome. Your work is thorough and consistently accurate.	Mastery — Great work! This is going extra well for you. You have understood the outcome, are able to explain your strategies and apply these to situations. Your work is always accurate.
Outcome 1: Students will demonstrate understanding of factors of whole numbers by determining the prime factors, greatest common factor and least common multiple, square root and cube root	I need more help with becoming consistent with the criteria.	I can consistently determine the prime factors of a whole number, GCF and LCM of whole numbers	I can find the principal square root and cube root of whole numbers using the factors of the number.

I am able to explain the strategy I use for finding prime factors, GCF or LCM, square root and cube roots. | I can report about the numbers 0 and 1 with respect to factors and multiples.

I can perform error analysis.

I am able to solve situational problems involving GCF, LCM, square roots and cube roots. |

OUTCOMES	ASSESSMENT RUBRICS			
FP10.2 Demonstrate understanding of irrational numbers in both radical (including mixed radical) and exponent forms through: representing; identifying; simplifying; ordering; relating to rational numbers; applying exponent laws				
Level

Criteria | **Beginning**
Spend some extra time with the criteria and ask for help. | **Approaching**
Good start. You are beginning to make sense of this on your own. You are consistent with the basic learning goals for this outcome. | **Proficient**
You did it and you did it on your own. You are able to complete the processes for this outcome. Your work is thorough and consistently accurate. | **Mastery**
Great work! This is going extra well for you. You have understood the outcome, are able to explain your strategies and apply these to situations. Your work is always accurate. |
| **Outcome 2A**: Students will demonstrate understanding of irrational numbers by determining if a number is an irrational number, ordering rational numbers, and knowing where they may be used. | I need more help with becoming consistent with the criteria. | I am consistently able to change an entire radical to a mixed radical and a mixed radical to an entire radical for simple numbers (ie. not a lot of factors).

I am consistently able to order real numbers including rational and irrational. | I am able to change all radical numbers from mixed to entire and vice versa.

I am able to consistently determine and justify if a number is irrational in radical form (by simplifying). | I am able to answers questions involving irrational numbers and explain how they are used in the question.

I am able to perform error analysis |
| **Outcome 2B**: Students will demonstrate understanding of irrational numbers in exponent form | I need more help with becoming consistent with the criteria | I am consistently able to evaluate and simplify expressions using all exponent laws including a negative or rational exponent (numerical and variable bases) where there is one step. | I am consistently able to simplify expressions by applying the exponent laws (numerical and variable bases) involving more than one step, including negative and rational exponents | I am able to perform error analysis.

I am able to determine which value is larger/smaller in a set of numbers.

I am able to answer situational questions.

I am able to explain my strategies. |

OUTCOMES	ASSESSMENT RUBRICS			
FP10.3 Demonstrate understanding of SI and imperial units of measurement including: linear measurement; surface area of spheres, right cones, cylinders, prisms and pyramids; volume of spheres, right cones, cylinders, prisms, and pyramids; relationships between and within measurement systems				
Level / Criteria	**Beginning** Spend some extra time with the criteria and ask for help.	**Approaching** Good start. You are beginning to make sense of this on your own. You are consistent with the basic learning goals for this outcome.	**Proficient** You did it and you did it on your own. You are able to complete the processes for this outcome. Your work is thorough and consistently accurate.	**Mastery** Great work! This is going extra well for you. You have understood the outcome, are able to explain your strategies and apply these to situations. Your work is always accurate.
Outcome 3A: Demonstrate understanding of SI and imperial units of measurements including linear measurement and relationships between and within measurement systems	I need more help with becoming consistent with the criteria.	I can use referents to estimate linear lengths. I can convert when there is a single step involved in the conversion.	I can consistently convert between systems of measurements. I can consistently measure linear lengths using appropriate measurement tools.	I can solve situational questions involving measurements and conversions. I understand the difference between comparable measures between systems (ie. Yards to metres) I can verify my conversions.
Outcome 3B: Demonstrate understanding of surface area and volume	I need more help with becoming consistent with the criteria.	I can consistently find the surface area and volume when the necessary dimensions are given.	I can consistently find the surface area and volume of right pyramids, right cones, right prisms, cylinders and spheres	I can accurately determine an unknown measurements given the surface area/volume and some measurements. I can solve situational questions involving surface area/volume.

				I can find the surface area/volume of composite objects.

OUTCOMES	ASSESSMENT RUBRICS			
FP10.4 Develop and apply the primary trigonometric ratios (sine, cosine, tangent) to solve problems that involve right triangles.				
Level Criteria	Beginning Spend some extra time with the criteria and ask for help.	Approaching Good start. You are beginning to make sense of this on your own. You are consistent with the basic learning goals for this outcome.	Proficient You did it and you did it on your own. You are able to complete the processes for this outcome. Your work is thorough and consistently accurate.	Mastery Great work! This is going extra well for you. You have understood the outcome, are able to explain your strategies and apply these to situations. Your work is always accurate.
Outcome 4: Demonstrate understanding of how to develop and apply the primary trigonometric ratios (sine, cosine, tangent) to solve problems that involve right triangles.	I need more help with becoming consistent with the criteria.	I can apply relationships between the ratios of side lengths and angle sizes in similar right triangles. I can demonstrate how to identify the hypotenuse of a right triangle and the adjacent and opposite sides to an acute angle in that right triangle. I can set up the trig ratios correctly. I can use my calculator to find trig ratio values and measures of angles.	I am able to consistently solve problems for a missing value involving one right triangle by applying the primary trigonometric ratios and/or the Pythagorean Theorem.	I am able to consistently solve right triangles. I am able to create and solve problems that involve indirect and direct linear measurements by using the primary trigonometric ratios, the Pythagorean Theorem, and measurement instruments. I will be able to explain and analyse problems involving right triangles. I can solve problems involving more than one right triangle.

OUTCOMES | ASSESSMENT RUBRICS

FP10.5 Demonstrate understanding of the multiplication and factoring of polynomial expressions (concretely, pictorially, and symbolically) including: multiplying of monomials, binomials, and trinomials; common factors; trinomial factoring; relating multiplication and factoring of polynomials

Level / Criteria	Beginning — Spend some extra time with the criteria and ask for help.	Approaching — Good start. You are beginning to make sense of this on your own. You are consistent with the basic learning goals for this outcome.	Proficient — You did it and you did it on your own. You are able to complete the processes for this outcome. Your work is thorough and consistently accurate.	Mastery — Great work! This is going extra well for you. You have understood the outcome, are able to explain your strategies and apply these to situations. Your work is always accurate.
Outcome 5A: Students will demonstrate an understanding of the multiplication of monomials, binomials, and trinomials concretely, pictorially and symbolically.	I need more help with becoming consistent with the criteria.	I am consistent with multiplying monomials by polynomials I am consistent with the process of how to multiply binomials by binomials, but I make consistent mistakes, maybe with signs	I am consistent with multiplying binomials by binomials	I am able to simplify, model and explain multiplying polynomials. Some ways I might show this are: • I am able to multiply all types of polynomials accurately. • I am able to perform error analysis on multiplication of polynomials. • I am able to show multiplication pictorially, concretely and symbolically. • I can explain the relationship of binomial multiplication to two digit number multiplication.
Outcome 5B: Students will demonstrate an understanding of factoring concretely, pictorially and symbolically.	I need more help with becoming consistent with the criteria.	I am consistent with factoring 2 of the 3 types of polynomial factoring (GCF, trinomials, difference of squares) where there is only one method to the question (ie. I only have to do GCF or box method ONCE in	I am consistent with factoring polynomials where there is only one method to the question. I am able to perform the first step in a multiple strategy question (ie. where you have to do GCF and then factor a trinomial, or where you have to continue difference of	I am consistent with factoring polynomials of all types and any number of steps. I am able to perform error analysis. I am able to explain the relationship between multiplying and factoring polynomials

	the question)	squares more than once)	

OUTCOMES	ASSESSMENT RUBRICS			
FP10.6 Expand and apply understanding of relations and functions including: 1) relating data, graphs, and situations 2) analyzing and interpreting 3) distinguishing between relations and functions				
Level / Criteria	Beginning Spend some extra time with the criteria and ask for help.	Approaching Good start. You are beginning to make sense of this on your own. You are consistent with the basic learning goals for this outcome.	Proficient You did it and you did it on your own. You are able to complete the processes for this outcome. Your work is thorough and consistently accurate.	Mastery Great work! This is going extra well for you. You have understood the outcome, are able to explain your strategies and apply these to situations. Your work is always accurate.
Outcome 6: Students will demonstrate understanding of relations and functions	I need more help with becoming consistent with the criteria.	I am able to consistently determine if a relation is a function. I can determine the domain and range of relations of discrete data (points).	I can determine the domain and range of any type of relation(from all types, graphs, pairs, table of values). I can determine and explain any restrictions on the domain and range of a relation. I am able to match a graph to its given situation.	I am able to analyze graphs of relations to determine the situation that it could represent. I can draw a graph given a situation. I am able to explain the difference between relations and functions.

OUTCOMES	ASSESSMENT RUBRICS			
FP10.7 Demonstrate, with and without the use of technology, understanding of slope (concretely, pictorially, and symbolically) with respect to: line segments and lines, rate of change, ratio of rise to run, parallel lines, perpendicular lines				
Level / Criteria	**Beginning** Spend some extra time with the criteria and ask for help.	**Approaching** Good start. You are beginning to make sense of this on your own. You are consistent with the basic learning goals for this outcome.	**Proficient** You did it and you did it on your own. You are able to complete the processes for this outcome. Your work is thorough and consistently accurate.	**Mastery** Great work! This is going extra well for you. You have understood the outcome, are able to explain your strategies and apply these to situations. Your work is always accurate.
Outcome 7: Students will demonstrate understanding of linear relations by determining rate of change/slope	I need more help with becoming consistent with the criteria.	I am consistently able to determine the rate of change/slope of a linear relation from a graph (rise/run), from two given points (slope formula), from a given equation. I am consistently able to classify lines as having positive or negative slopes.	I am consistently able to determine the slope of parallel lines and perpendicular lines given the slope of one of the lines. I am consistently able to determine if lines are parallel, perpendicular or neither. I am able to draw the graph of a relation given the slope.	I am able to justify why lines are parallel, perpendicular or neither. I am able to explain what the rate of change/slope represents in the context of a situation.

OUTCOMES	ASSESSMENT RUBRICS			

FP10.8: Demonstrate understanding of linear relations including: 1) representing in words, ordered pairs, tables of values, graphs, function notation, and equations 2) Determining characteristics including intercepts, slope, domain and range.

Level / Criteria	Beginning Spend some extra time with the criteria and ask for help.	Approaching Good start. You are beginning to make sense of this on your own. You are consistent with the basic learning goals for this outcome.	Proficient You did it and you did it on your own. You are able to complete the processes for this outcome. Your work is thorough and consistently accurate.	Mastery Great work! This is going extra well for you. You have understood the outcome, are able to explain your strategies and apply these to situations. Your work is always accurate.
Outcome 8A: Students will demonstrate and understanding of linear relations by representing in words, ordered pairs, tables of values, graphs, function notation and equations and determining characteristics	I need more help with becoming consistent with the criteria.	I am able to consistently determine if a relation is linear. I can consistently state the independent, dependent variable, x-intercept and y intercept of a linear relation.	I am able to interpolate and extrapolate a linear relation in function notation, a graph, and an equation. I can state the domain and range of a linear function. I can determine and explain restrictions on domain and range of a linear relation.	I am able to analyze a graph to predict values in situational questions. I can explain why a function is a linear function. I am able to explain the relationship between a linear function written in function notation and as an equation in two variables.
Outcome 8B: Students will demonstrate understanding of linear relations through graphing a linear relation	I need more help with becoming consistent with the criteria.	I am consistently able to graph a linear relation given a table of values/ordered pairs	I am consistently able to graph a linear relation given the equation.	I am able to perform error analysis. I can explain their graphing strategy. I am able to graph a linear relation given the context of the relation.

OUTCOMES	ASSESSMENT RUBRICS			
FP10.9 Demonstrate understanding of the writing and application of equations of linear relations, given: a graph of a relation, a point that satisfies a relation and the slope of the relation, two distinct points that satisfy a relation, a point that satisfies the relation and the equation of a line parallel or perpendicular to the relation				
Level / Criteria	**Beginning** Spend some extra time with the criteria and ask for help.	**Approaching** Good start. You are beginning to make sense of this on your own. You are consistent with the basic learning goals for this outcome.	**Proficient** You did it and you did it on your own. You are able to complete the processes for this outcome. Your work is thorough and consistently accurate.	**Mastery** Great work! This is going extra well for you. You have understood the outcome, are able to explain your strategies and apply these to situations. Your work is always accurate.
Outcome 9: Students will demonstrate understanding of linear relations through writing the equation of the relation	I need more help with becoming consistent with the criteria.	I am consistently able to write the equation of a line when given the slope and a point.	I can consistently write linear equations in slope-intercept form, slope-point form and general form given any acceptable pieces of information (excluding parallel or perpendicular lines).	I am able to write an equation when dealing with parallel or perpendicular lines. I am able to write an equation from a given situation. I am able to describe my strategies of writing equations. I can verify my equations using points on the line.

OUTCOMES	ASSESSMENT RUBRICS			
FP10.10 Solve problems that involve systems of linear equations in two variables, graphically, and algebraically				
Level / Criteria	**Beginning** Spend some extra time with the criteria and ask for help.	**Approaching** Good start. You are beginning to make sense of this on your own. You are consistent with the basic learning goals for this outcome.	**Proficient** You did it and you did it on your own. You are able to complete the processes for this outcome. Your work is thorough and consistently accurate.	**Mastery** Great work! This is going extra well for you. You have understood the outcome, are able to explain your strategies and apply these to situations. Your work is always accurate.
Outcome 10: Students will demonstrate understanding of systems of linear equations.	I need more help with becoming consistent with the criteria.	I am able to determine the solution to a system of linear equations when the graphs of the systems are given. I can explain the meaning of this solution. I am able to determine if a point is a solution to the system. I am able to solve a basic system of linear equations algebraically (basic means coefficients are already the same or a variable is isolated)	I am able to solve a system of linear equations to find the <u>exact</u> solution when there are no fractional or decimal coefficients. I can determine the number of solutions to a linear system if the equations are already in slope-intercept form.	I am able to solve a system of linear equations to find the exact solution when fraction or decimal coefficients are involved. I am able to solve problems involving systems of linear equations. I am able to analyze a system of linear equations to determine how many solutions it will have. I am able to solve a system multiple ways and discuss the solutions found.