Foundations & Pre-calculus 10 Math Rubrics

FP10.1 Student demonstrates an understanding of factors of whole numbers by determining the: prime factors, greatest common factor, least common multiple, principal square root, cube root.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
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.

FP10.2a Student demonstrates an understanding of irrational numbers by determining if a number is an irrational number, ordering rational numbers, and knowing where they may be used.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
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.	I am able to change all radical numbers from entire to mixed form. I am consistently able to order real numbers including rational and irrational. I am able to consistently determine and justify if a number is irrational in radical form.	I am able to answers questions involving irrational numbers and explain why they are used in the question. I am able to perform error analysis.

FP10.2b Student demonstrates an understanding of irrational numbers in exponent form.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
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 able to change from exponent form to radical form and vice versa.	I am consistently able to demonstrate the process of simplifying expressions by applying the exponent laws (numerical and variable bases) involving more than one step, including negative and/or 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.

FP10.3a Student demonstrates an understanding of SI and imperial units of measurements including linear measurement and relationships between and within measurement systems.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
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.

FP10.3b Student demonstrates an understanding of SI and imperial units of measurements including surface area and volume.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more help with becoming consistent with the criteria.	I can consistently find the surface area and volume when the necessary	I can consistently find the surface area and volume of right pyramids, right cones,	I can accurately determine an unknown measurement given the surface area/volume and some measurements. I can solve situational questions involving

	dimensions are given.	right prisms, cylinders and spheres.	surface area/volume. I can find the surface area/volume of composite objects.

FP10.4 Student demonstrates an understanding of how to develop and apply the primary trigonometric ratios (sine, cosine, tangent) to solve problems that involve right triangles.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more help with becoming consistent with the criteria.	I can identify the hypotenuse, the adjacent and opposite sides to an angle in that right triangle. I can solve for an unknown given which trig ratio to use.	I am able to solve for a missing value by applying the trig ratios.	I am able to consistently solve right triangles. I am able to explain and analyze problems involving right triangles.

FP10.5a Student demonstrates an understanding of the multiplication of monomials, binomials, and trinomials concretely, pictorially and symbolically.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
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 and express answers in simplest form.	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.

FP10.5b Student demonstrates an understanding of factoring concretely, pictorially and symbolically.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more help with becoming consistent with the criteria.	I am consistent with factoring when told which type of polynomial factoring.	I am consistent with factoring single step polynomials when the type is not given.	I can factor polynomials of all types including multivariable and multi - step. I am able to perform error analysis.

FP10.6 Student demonstrates an understanding of relations and functions.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
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 with discrete data (points).	I can consistently determine the domain and range of any graph. I can determine and explain any restrictions on the domain and range of a relation.	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.

FP10.7 Student demonstrates an understanding of linear relations by determining rate of change/slope.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more help with becoming consistent with the criteria.	I am consistently able to determine the slope of a graph (rise/run), and 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/or perpendicular lines given the slope of one of the lines.	I am consistently able to determine if lines are parallel, perpendicular or neither given the equation. I am able to determine the slope given two points. 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 the question.

FP10.8a Student demonstrates an understanding of linear relations by representing in words, ordered pairs, tables of values, graphs, function notation, equations, and determining characteristics.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
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 x-intercept and y intercept of a linear relation.	I am able solve equations written in function notation. I can determine x and y intercepts given an equation.	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. I am able to demonstrate an understanding of function notation.

FP10.8b Student demonstrates an understanding of linear relations through graphing a linear relation.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
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 my graphing strategy. I am able to graph a linear relation with multiple strategies.

FP10.9 Student demonstrates an understanding of linear relations through writing the equation of the relation.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more help with becoming consistent with the criteria.	I am consistently able to write the equation of a line when no manipulation is required.	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.

FP10.10 Student demonstrates an understanding of systems of linear equations.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
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 is no fraction 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.