

Transition to Technical Math Unit Rubrics  
Human and Public Services

Standard	4 - Mastery	3 - Proficient	2 - Basic	1- Below Basic	0 - No Evidence
TM-NS1-C. Apply properties of operations to calculate with numbers in any form including signed numbers	C. Find and correct calculation errors, using any real number, within an authentic task.	C. Calculate values for different problems within an authentic task(s) for any real number. Problems must include signed values and a variety of real numbers.	C. Calculate values for different problems within an authentic task(s) for integer, simple fractions and simple decimal.	C. Calculate values for different problems within an authentic task(s) for an integer.	C. Not yet able to consistently calculate answers for problems using real numbers in an authentic task.
TM-NS1-F. Use rational approximations of irrational numbers to compare the size of irrational numbers and estimate the value of expressions (e.g., $\pi/2$ ).	F. Apply multiple rational approximations within one task to more precisely estimate values.	F. Apply rational approximations to more precisely estimate values within an authentic task.	F. Estimate approximations of irrational numbers and be able to round up to next larger integer to estimate values with in an authentic task.	F. Determine placement on a number line between consecutive integers.	F. Not yet able to calculate rational approximations.
TM-NS2.A. Convert like measurement units within a given measurement system and between systems.	A. Accurately convert units among and between systems and determine which system is more applicable to the given scenario.	A. Convert units within a measurement system and between systems within an authentic task.	A. Convert units between measurement systems.	A. Convert units within the same measurement system. (i.e. converting inches to feet, centimeters to meters).	A. Not yet able to convert units between like or unlike systems.
TM-NS3-A. Evaluate expressions at specific values for their variables. Include expressions that arise from formulas in authentic problems.	A. Explain how the values of the variable(s) effect with each other and how changes can affect the final value in an authentic task.	A. Evaluate variable expressions containing common integer, decimal, and fractional values found in authentic task. (with and without technology)	A. Evaluate variable expressions with integers, decimals, and fraction values.	A. Evaluate variable expressions with integer values.	A. Not yet able to accurately evaluate an expression for a given value.
TM-NS3-B. Perform arithmetic operations, including those involving whole-number exponents, using order of operations.	B. Find and correct an error with an order of operation problem which includes whole number exponents.	B. Calculate an order of operation problem with an authentic task which involves whole number exponents. (with and without technology) AND B. Explain the process used to calculate and order of operation problem within an authentic task which includes whole number exponents.	B. Use order of operations to simplify an expression.	B. Explain the process using the order of operations to simplify a given expression.	B. Not yet able to apply order of operations.
TM-NS3-C. Work with radicals and integer exponents.	C. Find and correct an error within a problem which includes radical and integer exponents.	C. Solve problems or use formulas within an authentic task which involve radical and integer exponents.	C. Evaluate formulas with radicals and integer exponents.	C. Able to compute with radicals and integer exponents on a calculator.	C. Not yet able to simplify a problem with radical or integer exponents.
TM-NS3-E. Evaluate square roots of small perfect squares and cube roots of small perfect cubes.	E. Evaluate larger perfect square and cube roots within an authentic task without a calculator.	E. Evaluate small, perfect square and cube roots, within an authentic task without a calculator	E. Evaluate small, perfect square and cube roots with a calculator.	E. Recognize perfect squares and perfect cubes.	E. Not yet able to evaluate perfect square or cube root.

### Transition to Technical Math Unit Rubrics

TM-NS3-F. Know that square roots and cubed roots of non-perfect squares and cubes are irrational and understand what irrational numbers are.	F. Estimate values of a non-perfect square or cube root without technology and determine how to use the value in context of the authentic task.	F. Estimate the value of a non-perfect square or cube root when solving problems. AND F. Determine when an answer in an authentic task will be an irrational number. Can describe how accuracy is impacted by the use of irrational numbers	F. Recognize a value as an estimate (close in value) of a non-perfect square or cube.	F. Estimate roots of non-perfect squares and cubes using a calculator.	F. Not yet able to make a connection between a non-perfect square or cube root and an irrational number.
TM-G2.A. Use facts about supplementary, complementary, vertical, adjacent, corresponding, alternate interior, and alternate exterior angles to solve for an unknown angle.	A. Explain the properties being used to solve for missing angle measures in an authentic task.	A. Recognize supplementary, complementary, vertical, adjacent, and corresponding angles on authentic figure.	A. Apply angle properties, such as vertical angles are congruent, to calculate unknown angle values.	A. Determine unknown angle measures within an authentic task applying angle properties.	A. Not yet able to apply angle properties to determine unknown angle measures within an authentic figure.
TM-G2-D. Represent applied problems by graphing points in the coordinate plane and interpret coordinate values of points in the context of the situation.	D. Create the graph and label axis, scale, coordinates from an authentic task.	D. Graph and interpret meanings of coordinate points from an authentic task with given origin and scale.	D. Graph contextual situation on a coordinate plane with a given labeled axis.	D. Can graph points and give coordinates of points on a graph.	D. Not yet able to recognize coordinates of points or graph points.
TM-G3.A. Use the Pythagorean Theorem to solve for the length of a leg or the hypotenuse of right triangles.	A. Apply Pythagorean Theorem in an authentic task to determine if the measures form an acute, right, or obtuse triangle.	A. Apply Pythagorean Theorem in an authentic task to find the side of a right triangle.	A. Apply the Pythagorean Theorem to find sides of a right triangle.	A. Identify the legs and hypotenuse of a right triangle	A. Not yet able to apply Pythagorean Theorem to calculate an unknown side of a triangle.
TM-G3.B. Use right triangle ratios (sine, cosine, tangent, and their inverses) to solve for unknown sides and angles in right triangles.	B. Prove calculations using a different Trigonometry function or another Triangle Property. (ie Triangle Sum and Pythagorean Theorem).	B. Calculate unknown sides and angles of a right triangles within an authentic task.	B. Calculate unknown sides and angles of a right triangles.	B. Can find trigonometry ratios of an acute angle of a triangle with known sides.	B. Not yet able to apply right triangle trigonometry to calculate unknown sides and angles in a right triangle.
TM-BA1.C. Solve linear equations and inequalities in one variable.	C. Find and correct solution errors and/or interpretation errors of equations or inequalities within an authentic task.	C. Solve and interpret solution of linear equations and inequalities, in one variable, within an authentic task.	C. Solve multi-step equations and inequalities.	C. Solve two-step equation and inequality.	C. Not yet able to solve single variable equations and inequalities.
TM-BA1.D. Use linear equations to model authentic contexts.	D. Model, solve, and interpret solution(s) of linear equations within an authentic task.	D. Model an authentic task with linear equations. Defining variable(s) and solution meaning within context of the task.	D. Model an authentic task with a linear equation, may be incorrect.	D. Define variable and restate known values from an authentic task.	D. Not yet able to model an authentic task with a linear equation.

### Transition to Technical Math Unit Rubrics

TM-BA2-A. Use variables to represent two quantities involving geometric figures that change in relationship to one another.	A. Predict the impact of change on one variable as it relates to the second variable, using an authentic task.	A. Define and use variables that represent quantities of geometric figures within an authentic task. AND A. Describe the relationship of two quantities within a geometric figure and how they change in relationship to each other.	A. Evaluate the geometric relationship with different values in the two quantities and note changes in one quantity when the other is changed.	A. Define quantities needed given a geometric formula.	A. Not yet able to represent two quantities of a figure as variables.
TM-BA2-B. Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable.	B. Describe the relationship, using explicit terms, values, or units, of the two variables in an authentic task.	B. Write and define an equation that represents an authentic task having an independent and dependent variable.	B. Write an equation for one variable in terms of another.	B. Identify the dependent and independent variables in an equation.	B. Not yet able to write an equation with an independent and dependent variable that represents an authentic task.
TM-BA2-C. Rearrange formulas to highlight a quantity of interest using the same reasoning as in solving equations.	C. Explain effects to the formula as changes to a variable happen within an authentic task.	C. Solve and interpret a formula (literal equation) within an authentic task.	C. Solve multi-step literal equations.	C. Solve 1 or 2 step literal equations.	C. Not yet able to solve a literal equation.
TM-BA3-A. Evaluate expressions, including those that arise from formulas in authentic problems, at specific values for their variables.	A. Explain answers from an authentic task.	A. Evaluate the expression or formula, with correct units, within an authentic task.	A. Evaluate the expression or formula, with correct units.	A. Correctly substitute the numbers into the expression.	A. Not yet able to evaluate an expression.
TM-BA3-C. Choose and interpret units consistently in formulas.	C. Justify final unit measure selection.	C. Interpret units of measure in a formula within an authentic task.	C. Recognize different unit measures within a problem and convert correctly.	C. Determine appropriate units for final answers.	C. Not yet able to choose units of measure in formulas.
TM-BA3-D. Apply appropriate formulas to solve applications	D. Apply and explain formulas used to solve problems in an authentic task.	D. Select and apply appropriate formulas to solve problems in an authentic task.	D. Select the appropriate formula to solve an authentic task.	D. Determine correct formula for an authentic task when given options.	D. Not yet able to apply formulas within an authentic task.