

Workplace & Apprenticeship 10 Math Rubrics

WP 10.1 Demonstrate understanding of the preservation of equality including solving problems that involve the manipulation and application of formulas related to: perimeter, area, the Pythagorean theorem, primary trigonometric ratios, income.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Outcome will be integrated in other outcomes.			

WP10.2 Analyze puzzles and games that involve spatial reasoning using problem solving strategies.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
Outcome will be integrated in other outcomes.			

WP10.3 Demonstrate using concrete, and pictorial models, and symbolic representations, understanding of measurement systems including: SI, The British Imperial System, The US Customary System

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can consistently develop and apply single step strategies to convert units of temperature, mass, volume, between and within the SI and imperial systems including word problems.	I can set up multi step problems and calculations involving mass and volume which could include conversions between and within systems of measurement.	I can set up a multi-step problem involving both mass and volume and will include conversions between and within systems of measurement. I express SI units in decimals and imperial units in fractions and state the proper units of measurement in my answer.

WP10.4 Demonstrate, using concrete and pictorial models, and symbolic representations, understanding of linear measurement, including units in the SI and Imperial systems of measurement.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can estimate, using personal referents for SI and Imperial units, linear measurements such as the dimensions of 2-D shapes and 3-D objects. I can measure and record in SI and imperial units using a variety of measuring instruments. I can apply strategies to convert units of linear measurements within and between systems.	I can apply knowledge and skills with linear measurement to solve or verify the reasonableness of solutions to situational questions including perimeter, circumference, and length-width-height measurement used in shipping.	I can develop, generalize, explain and apply strategies to determine the midpoint of a linear measurement, such as length, width, height, depth, diagonal length or diameter of a 3-D object (eg) Given the dimensions of a wall, determine the center of the wall in order to hang a painting. How far is the centre of the painting from each of the adjacent walls? I can determine the operation that should be used to solve a linear measurement problem and explain the reasoning. (eg) write the equation that could be used to determine how many lengths of $\frac{1}{3}$ of a yard can be cut out of a length of $5\frac{1}{2}$ yards. My answers include proper units.

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WP10.5 Demonstrate, using concrete and pictorial models, and symbolic representations, understanding of area of 2-d shapes and surface area of 3-d objects including units in the SI and imperial systems of measurement.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can apply strategies for determining area and surface area for regular 2-D shapes and 3-D objects given a diagram.	I can solve situational questions involving area and surface area for regular 2-D shapes and 3-D objects without a diagram. I can solve situational questions involving area and surface area for irregular and composite 2-D shapes and 3-D objects with a diagram. I can apply strategies to convert squared units of area measurements within and between systems.	I can analyze the effect of changing the measurement of one or more dimensions on area and perimeter of rectangles and surface area of rectangular prisms. I can critique the statement "Area involves one face of a 2-D shapes while surface area is the sum of the areas of all the faces of a 3-D object." My answer includes proper units.

WP10.6a Apply understanding of the Pythagorean Theorem to solve problems.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I am able to find the length of the leg or hypotenuse of a right triangle with Pythagorean Theorem given basic information and a diagram. Given the lengths of three sides, I can determine if a triangle is a right triangle.	I can apply an understanding of the Pythagorean Theorem to solve a variety of word problems without being given a diagram.	I can develop, generalize, apply and explain strategies to verify if a corner of a 3-D object is square (90°) or if a parallelogram is a rectangle. Answers must include units of measure.

WP10.7 Demonstrate understanding of similarity of convex polygons, including regular and irregular polygons.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can determine if 2 or more polygons are similar by evaluating if they have corresponding angles of equal measure and corresponding sides that are proportional. I can determine the scale factor used to create similar polygons. Given two similar polygons, I can use the scale factor to calculate the length of a scale drawing.	I can draw polygons that are similar to a given polygon using measuring tools and technology. I can apply knowledge and skills related to similar polygons to solve situational questions that involve polygons or separate right triangles.	I can apply knowledge and skills related to situational questions that involve right triangles with a shared acute angle. I can explain why two triangles are similar if one of the two following requirements is true: any two of the three corresponding angles are congruent or one pair of corresponding angles is congruent or the corresponding sides adjacent to these angles are proportional.

WP10.8 Demonstrate an understanding of primary trigonometric ratios (sine, cosine, and tangent)

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can observe right triangles and determine the ratio of the acute angle and the length of the side opposite to the side adjacent, side opposite to the hypotenuse and side adjacent to the hypotenuse. I am able to find the unknown side of a right triangle given the length of one side and an angle measurement given a diagram.	I can apply an understanding of the Sine, Cosine and Tangent ratios to solve a variety of situational questions involving a missing side or a missing angle without a diagram.	I can apply an understanding of the Sine, Cosine and Tangent ratios to solve a variety of multi-step situational questions involving a missing side or a missing angle without a diagram. (eg) find $\angle A$ to determine side B in triangles that share an acute angle. Answers must include units of measure.

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WP10.9 Demonstrate understanding of angles including: drawing and sketching, replicating and constructing, bisecting, relating to parallel, perpendicular, and transversal lines, and solving problems.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can determine a complimentary and supplementary angle to a given angle. Given a angle measurement, I can determine the size of the bisected angle and name the original angle. I can use referents to estimate angle measurements (eg) 22.5°, 45°, 60°. Given parallel or perpendicular lines, I can determine the size of angles including corresponding, alternate interior, same side interior etc.	Given parallel or perpendicular lines, I can determine and explain the reasons for the size of angles including vertically opposite, corresponding, alternate interior, same side interior etc. I can state the true bearing given a picture or basic description or given the true bearing I can state the direction. I can apply knowledge and skills to situational questions involving angles, parallel, perpendicular, and transversal lines. I can replicate, construct, and bisect angles using compass and/or protractor.	I can do multi-step true bearing questions. I can describe and apply strategies for determining if lines or planes are perpendicular or parallel in situational questions. I can do multi-step true bearing questions. I can create and solve relevant situational questions that involve angles and/or parallel lines and transversals, including perpendicular transversals, and explain the reasoning.

WP10.10 Apply proportional reasoning to solve problems involving unit pricing and currency exchange.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can do single step calculations involving unit price, best buy, currency exchange, percent increase/decrease and unit price for two or more items.	I can do multi-step calculations involving unit price, best buy, currency exchange, percent increase/decrease and comparing unit price for two or more items.	I can explain the solution of a best buy situation in terms of the cost as well as other factors, such as quality and quantity. I can describe and analyze different sales promotion techniques used by media to make items seem less expensive. I can calculate the % mark up or mark down of an item given the original price and the sale price/marked up price. I round answers correctly and use 2 decimal places for money.

WP10.11 Demonstrate understanding of income including: wages, salary, contracts, commissions, piecework, self-employment, gross pay and net pay

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I understand the difference between net pay and gross pay. I can describe, using examples, various methods of earning income. I can determine gross pay for different situations including hourly wage, overtime, and simple commission. I can read and explain the information provided on a pay stub.	I can determine the CPP, EI and income tax deductions for a given amount of gross pay. I can determine in decimal form, from a time schedule, the total time worked in hours and minutes, including time and a half and/or double time.	I can describe the advantages and disadvantages for a variety of methods of earning income, such as hourly wage, tips, piecework, salary, commission, contract work, and self-employment. I can give examples of deductions that may be relevant to self in the future (eg) health plans, union dues, charitable donations. I round correctly and use 2 decimal places and dollar signs.