

Workplace & Apprenticeship 20 Math Rubrics

WP 20.1 Expand and apply understanding of the preservation of equality including solving problems that involve the manipulation and application of formulae for volume and capacity, surface area, slope and rate of change, simple interest, and finance charges.

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

WP20.2 Demonstrate the ability to analyze puzzles and games that involve numerical reasoning and problem solving strategies.

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

WP20.3 Extend and apply understanding of surface area, volume, and capacity using concrete and pictorial models and symbolic representation (SI or imperial units of measurement).

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can convert given volume, surface area, and capacity measurements between SI units and imperial units. I can calculate the surface area, volume and capacity of individual shapes (prisms, cones, cylinders, pyramids, spheres)	I can solve situational questions that involve the volume of 3-D objects and composite 3-D objects in a variety of contexts. I can solve situational questions that involve the capacity of containers. Given the surface area or volume, I can calculate a missing dimension (height, length or radius).	I can determine the surface area, volume and capacity of prisms, cones, cylinders, pyramids, spheres, and composite 3-D objects, using a variety of measuring tools, manipulate the formula and explain the strategy used. I can analyze and illustrate, using examples, the effect of dimensional changes on area, surface area, and volume.

WP20.4 Solve problems that involve at least two right triangles.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can apply the primary trig ratios and Pythagorean theorem to solve situational questions that involve angles of elevation or depression and questions involving two or more right triangles given a 2-D diagram.	I can apply the primary trig ratios and Pythagorean Theorem to solve situational questions that involve angles of elevation or depression without a diagram for 2-D and 3-D questions and explain the reasoning. I can apply primary trig ratios and/or Pythagorean Theorem to questions involving two or more right triangles without a diagram for 2-D questions and with a picture for 3-D questions and explain the reasoning.	I can apply the primary trig ratios to solve 3-D or irregular shaped dimensional situational questions that involve angles of elevation or depression or questions involving more than two right triangles without a picture. I can apply personal strategies to determine, with justification, if solutions to problems that involve two or three right triangles are reasonable.

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WP20.5 Extend and apply understanding of 3-D objects including: top, bottom, and side views, exploded views, component parts, and scale diagrams.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can describe or draw, using a variety of strategies top, bottom and side views, the component parts and a one-point perspective view of given 3-D objects.	I can draw to scale top, front, and side views of given 3-D objects and the components of a 3-D object. I can draw (not to scale) the components of a given exploded diagram.	I can analyze a set of views of 3-D objects to determine if they represent a given object and explain the reasoning.

WP20.6 Demonstrate understanding of personal budgets and their importance for financial planning.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can identify the difference between an income and an expense from a given list. I can explain the difference between variable, recurring and unexpected expenses. Given income and expense data, I can create a personal budget and calculate the percentage of income spent on various categories. I can calculate the length of time it will take for me to save for a specific goal.	I can create a personal budget from personally collected data. I can modify a budget to achieve a set of personal goals. Given income and expense data, I can calculate the percentage of income spent on various expenses and can graph this data on a circle graph.	I can calculate changes and justify reasons why I modified my budget to meet my personal goals. I can explain why I am creating a budget and can prioritize my expenses. I can Investigate and analyze "what if..." questions related to personal budgets.

WP20.7 Demonstrate understanding of compound interest.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can solve, using a formula, basic questions involving simple interest and compound interest.	I can solve situation questions that involve simple interest and compound interest. I will be given three of the four values in the formula $I = Prt$.	I can analyze and generalize the relationship between simple interest and compound interest. I can explain, using examples, the effect of changing different factors on compound interest such as different compounding periods, different interest rates, and starting at a younger age.

WP20.8 Demonstrate understanding of financial institution services used to access and manage personal finances, including credit options.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can explain and calculate various self-service, teller and banking charges associated with a bank account. I can calculate simple interest and the minimum monthly payment on my credit card balance. I can describe the advantages and disadvantages of: online banking, debit card purchases and different types of credit options.	I can analyze credit options related to the use of credit, such as service charges, interest, payday loans, and sales promotions, to make informed decisions, plans, and explain the reasoning. I can solve situational questions that involve credit linked to sales promotions, credit cards, or loans.	I can critique the statement, "It is always better to have the lowest possible limit on a credit card."

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WP20.9 Demonstrate understanding of slope with respect to rise over run, rate of change and solving problems.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can do single step calculations and word problems involving slope, and rate of change. I can convert from slope to % grade and to angle of elevation & back. I can calculate slope given two points and calculate the distance between the points.	I can solve situation questions, without pictures, that involve slope or rate of change, and verify and explain why solutions are reasonable or not. I can describe conditions under which a slope will be 0 or undefined and explain the reasoning. I can determine if the slope is constant and explain how I know.	I can analyze, generalize and explain, using illustrations, the relationship between slope and angle of elevation. I can critique the statement, "It requires less effort to independently use a wheelchair to climb a ramp of a certain height that has a slope of 1:12 rather than a slope of 1:18." Explain the difference between a slope of 3:1 and 1:3 including safety and functionality

WP20.10 Extend and apply proportional thinking to solve problems that involve unit analysis and scale.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can solve situational questions using unit analysis (unit to unit - km to miles). I can determine, using proportional reasoning, the dimensions of objects, given scale drawings or models.	I can solve situational questions using unit analysis (unit rate - km/h to m/sec). Solve situational questions that involve scale and explain the reasoning.	I can explain, using examples, how unit analysis and proportional reasoning are related. I can perform error analysis on proportional reasoning questions. I can explain the importance of scale in mathematical drawings and/or in situational applications.

WP20.11 Extend and apply understanding of representing data using graphs including: bar graphs, histograms, line graphs, circle graphs.

Beginning (1)	Approaching (2)	Proficiency (3)	Mastery (4)
I need more help with becoming consistent with the criteria.	I can identify and read information from bar graphs, histograms, line graphs and circle graphs. I can analyze and compare sets of bar graphs and histograms. Given data I can create the appropriate graph.	I can analyze graphs and determine and describe trends. I can explain, using examples how the same graph can be used to justify more than one conclusion and point of view. I can solve contextual problems that involve data analysis and graphs using a variety of strategies including interpolation and extrapolation.	I can analyze a set of data to determine possible graphs that could be used to represent the data and explain the advantages and disadvantages of each graph.