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)	Meeting (3)	Exemplary (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)	Meeting (3)	Exemplary (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)	Meeting (3)	Exemplary (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) given needed info.	I can solve situational questions that involve surface area, volume, and capacity of 3-D objects, when I need to calculate a needed dimension first, or need to convert units, or find SA of multiple items.	I understand the relationship between surface area, volume and capacity of 3-D objects. Given the surface area or volume, I can calculate a missing dimension (height, length or radius). I understand 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)	Meeting (3)	Exemplary (4)
I need more help with becoming consistent with the criteria.	I can apply the primary trig ratios and/or Pythagorean theorem to solve situational questions involving two right triangles given a 2-D diagram.	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 and/or Pythagorean Theorem to solve 3-D questions without a diagram or irregular shaped dimension situational questions.

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)	Meeting (3)	Exemplary (4)
I need more help with becoming consistent with the criteria.	I can sketch the top, bottom and side views of a 3-D object. I can sketch the component parts of a 3-D object.	I can draw a 2-D representation of a 3-D object using one point perspective, exploded diagram, and/or isometric drawing. I can draw the top, bottom and side views of a 3-D object to scale. I can draw the component parts of a 3-D object to scale.	Given an exploded diagram, or views (top, bottom and side) I can represent the original 3-D object to scale.

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

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (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 calculate the percentage of income spent on various categories.	I can create a personal budget from income and expense data. I can modify a budget to achieve a set of personal goals.	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.

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WP20.7 Demonstrate understanding of compound interest.

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more help with becoming consistent with the criteria.	I can solve, using a formula, basic questions involving simple interest. I can estimate doubling time using the Rule of 72.	I can determine the future value using the compound interest formula.	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.

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

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more help with becoming consistent with the criteria.	I can determine the service charge with a bank account. I can describe various services available from financial institutions as well as their advantages and disadvantages. I can describe methods taken to ensure the security of personal and financial information and their effectiveness.	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 apply my understanding of financial institution services used to access and manage personal finances, including credit options.

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

Beginning (1)	Approaching (2)	Meeting (3)	Exemplary (4)
I need more help with becoming consistent with the criteria.	I can do single step calculations involving slope. I can describe conditions under which a slope is 0 or undefined and explain the reasoning.	I can solve situational questions that involve slope or rate of change, and verify and explain why solutions are reasonable or not.	I can demonstrate an understanding of relationship between slope, angle of elevation, and % grade. 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)	Meeting (3)	Exemplary (4)
I need more help with becoming consistent with the criteria.	I can determine the unit rate. I can determine the dimensions of objects, given scale drawings or models.	I can solve situational questions using unit analysis (unit rate - i.e. 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 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)	Meeting (3)	Exemplary (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. Given data I can create bar, line or histogram graph.	I can describe trends from a given graph. I can explain, using examples how the same graph can be used to justify more than one conclusion and point of view. I can interpolate and extrapolate data on a graph. Given data I can create a circle graph.	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.