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Topic 1: Solving a word problem on proportions using a unit rate

Problem 1: A car travels 240 miles in 4 hours. Find the unit rate (miles per hour) and use it to calculate how far it travels in 7 hours.

Problem 2: A recipe uses 3 cups of flour for 12 servings. Find the unit rate (cups per serving) and determine how much flour is needed for 20 servings.

Topic 2: Solving a proportion of the form $(x+a)/b = c/d$

Problem 1: Solve the proportion $(x + 2)/3 = 5/6$. Cross-multiply and solve for x .

Problem 2: Compute x in the proportion $(x - 1)/4 = 3/8$. Use cross-multiplication and find the solution.

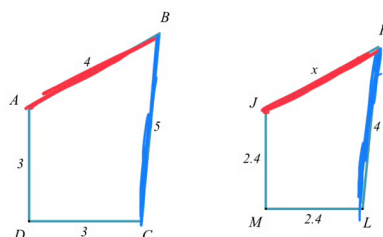
Topic 3: Word problem on proportions: Problem type 1

Problem 1: If 2 gallons of paint cover 800 square feet, how many gallons are needed to cover 1200 square feet? Set up a proportion and solve.

Problem 2: A map scale is 1 inch = 50 miles. If two cities are 3 inches apart on the map, find the actual distance. Use a proportion to calculate.

Topic 4: Similar polygons

The quadrilaterals $ABCD$ and $JKLM$ are similar.
 Find the length x of $\overline{JK}$.



$x =$



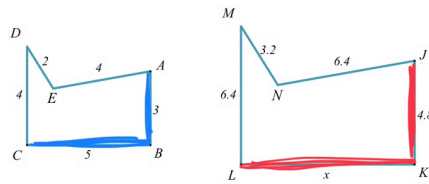
$$\frac{x}{4} = \frac{4}{5}$$

$$x \cdot 5 = 4(4)$$

$$\frac{5x}{5} = \frac{16}{5}$$

$$x = \frac{16}{5}$$

The pentagons $ABCDE$ and $JKLMN$ are similar.
Find the length x of $\overline{KL}$.



$x = \square$



$$\frac{x}{4.8} = \frac{5}{3}$$

$$x \cdot 3 = 4.8(5)$$

$$\frac{3x}{3} = \frac{24}{3}$$

$$x = 8$$

Topic 5: Converting between temperatures in Fahrenheit and Celsius

Problem 1: Convert 68°F to Celsius using the formula $C = (5/9)(F - 32)$. Show the steps and round to the nearest degree.

Problem 2: Convert 25°C to Fahrenheit using the formula $F = (9/5)C + 32$. Provide the calculation and the result.

Topic 6: U.S. Customary unit conversion with whole number values

Problem 1: Convert 5 feet to inches. Use the conversion factor (1 foot = 12 inches) and show the calculation.

Problem 2: Convert 32 quarts to gallons. Use the conversion factor (1 gallon = 4 quarts) and provide the result.

Topic 7: Metric distance conversion with whole number values

Problem 1: Convert 7 kilometers to meters. Use the conversion factor (1 km = 1000 m) and show the steps.

Problem 2: Convert 250 centimeters to meters. Use the conversion factor (100 cm = 1 m) and provide the result.

Topic 8: Converting between metric and U.S. Customary unit systems

Problem 1: Convert 10 kilometers to miles using the conversion factor (1 km $\approx$ 0.621 miles). Round to two decimal places.

Problem 2: Convert 50 pounds to kilograms using the conversion factor (1 lb $\approx$ 0.453592 kg). Round to two decimal places.

Topic 9: Word problem on proportions: Problem type 2

Problem 1: A recipe for 4 people requires 2 cups of sugar. How many cups of sugar are needed for 10 people? Set up a proportion and solve.

Problem 2: If 3 workers can complete a job in 8 hours, how long will it take 5 workers to complete the same job? Use a proportion to find the time.

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