

Ratios, Unit Rates & Proportional Reasoning



Use the matching sheet ID when checking answers.

Part A: Solve each ratio and unit rate problem below. Select the best answer.

1. A hybrid car travels 288 miles on 8 gallons of fuel. What is the unit rate of distance per gallon of fuel?

Answer: B. 36 miles per gallon

Unit rate = $288 \text{ miles} \div 8 \text{ gallons} = 36 \text{ miles per gallon}$.

2. Brand X sells a 24-ounce box of cereal for \$4.80. Brand Y sells a 32-ounce box of the same cereal for \$5.76. Which brand offers the lower unit price per ounce, and what is its rate?

Answer: B. Brand Y at \$0.18 per ounce

Brand X unit price = $\$4.80 \div 24 = \$0.20/\text{oz}$. Brand Y unit price = $\$5.76 \div 32 = \$0.18/\text{oz}$. Brand Y is lower by \$0.02/oz.

3. The ratio of red marbles to blue marbles in a jar is 3 : 5. If the jar contains 45 blue marbles, how many total marbles (red and blue combined) are in the jar?

Answer: B. 72 marbles

Each part = $45 \div 5 = 9$ marbles. Red marbles = $3 \times 9 = 27$. Total marbles = $27 + 45 = 72$ (or $(3 + 5) \times 9 = 72$).

Part B: Unit Conversion & Rate Application. Complete each proportional equation with the correct numerical value.

1. At a constant typing speed of 60 words per minute, Maya can type 150 words in 2.5 minutes.

2. A recipe calls for 3 cups of flour for every 2 cups of sugar. To make a larger batch using 30 cups of flour, the baker needs 45 cups of sugar (scaling multiplier is 10).

3. If 4 tickets to a science museum cost \$60, the unit price per ticket is 12 dollars less than \$27, equal to exactly \$15 per admission.

4. A 5-kilometer fun run is equal to approximately 3.1 miles. Running at 6 mph, finishing a 15-mile distance takes 2.5 hours.