

Essential Understanding: You can write ratios and find unit rates to compare quantities. You can also convert units and rates to solve problems.

Problem 1: Comparing Unit Rates

You are shopping for T-shirts. Which store offers the best deal?

Store A	Store B	Store C
$\frac{\$25}{2 \text{ shirts}} = \frac{\$12.50}{1 \text{ shirt}}$	$\frac{\$45}{4 \text{ shirts}} = \frac{\$11.25}{1 \text{ shirt}}$	$\frac{\$30}{3 \text{ shirts}} = \frac{\$10.00}{1 \text{ shirt}}$

Got it? If store B lowers its price to \$42 for 4 shirts, does the solution to the problem change? Explain in a full sentence.

Problem 2: Converting Units

What is the given amount converted to the given units?

Choose and multiply by the appropriate conversion factor. The appropriate factor will allow you to divide out the common units and simplify.

A. 330 minutes; hours

B. 15 kg; grams

C. 5 ft 3 in; inches

Got it? What is 1250 cm converted to meters?

Problem 3: Converting Units Between Systems

The CN Tower in Toronto, Canada, is about 1,815 ft tall. About how many meters tall is the tower? Use the fact that $1m \sim 3.28 ft$.

Got it?

- A. A building is 1,450 ft tall. How many meters tall is the building?
- B. Monetary exchange rates change from day to day. On a particular day, the exchange rate for dollars to euros was about 1 dollar=0.63 euro. About how many euros could you get for \$325 on that day?

Problem 4: Converting Rates

A student ran the 50 yd dash in 5.8 s. At what speed did the student run in miles per hour? Round your answer to the nearest tenth.

Know: *The running speed in yards per second*

Need: *The running speed in miles per hour*

Plan: *Write the speed as a ratio. Choose conversion factors so that the original units (yards and seconds) divide out, leaving you with the units you need (miles and hours)*

Got it?

- A. An athlete ran a sprint of 100 ft in 3.1s. At what speed was the athlete running in miles per hour? Round to the nearest mile per hour.
- B. **Reasoning.** In problem 4, one student multiplies by these three conversion factors to find the speed: $\frac{1 mi}{1760 yd}$, $\frac{60s}{1 min}$, and $\frac{60 min}{1 h}$. Can this method work? Why or why not. Answer in a complete sentence.