

Chapter 1 Ratios and Proportional Reasoning

Lesson 1-3 Convert Unit Rates

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- 1** A go-kart's top speed is 607,200 feet per hour. What is the speed in miles per hour?

You can use 1 mile = 5,280 feet to convert.

$$\begin{aligned}\frac{607,200 \text{ ft}}{1 \text{ hr}} &= \frac{607,200 \text{ ft}}{1 \text{ hr}} \times \frac{1 \text{ mi}}{5,280 \text{ ft}} && \text{Multiply by } \frac{1 \text{ mi}}{5,280 \text{ ft}}. \\ &= \frac{607,200}{1 \text{ hr}} \times \frac{1 \text{ mi}}{5,280} && \text{Divide out common units.} \\ &= \frac{607,200 \times 1 \text{ mi}}{1 \times 5,280 \text{ hr}} && \text{Simplify.} \\ &= \frac{115 \text{ mi}}{1 \text{ hr}} && \text{Simplify.}\end{aligned}$$

The go-kart's top speed is 115 mph.

- 3** A peregrine falcon can fly 322 kilometers per hour. How many meters per hour can the falcon fly?

You can use 1 kilometers = 1,000 meters.

$$\begin{aligned}\frac{322 \text{ km}}{1 \text{ hr}} &= \frac{322 \text{ km}}{1 \text{ hr}} \times \frac{1,000 \text{ m}}{1 \text{ km}} && \text{Multiply by } \frac{1,000 \text{ m}}{1 \text{ km}}. \\ &= \frac{322}{1 \text{ hr}} \times \frac{1,000 \text{ m}}{1} && \text{Divide out common units.} \\ &= \frac{322 \times 1,000 \text{ m}}{1 \times 1 \text{ hr}} && \text{Simplify.} \\ &= \frac{322,000 \text{ m}}{1 \text{ hr}} && \text{Simplify.}\end{aligned}$$

It can fly 322,000 kilometers per hour.