

## 7th Grade Lesson 50

- I can write unit multipliers for equivalent measures.
- I can use unit multipliers to convert from one unit of measure to another.

**Reducing / Canceling...**

$$\frac{24}{36} = \frac{\cancel{2} \cdot \cancel{2} \cdot \cancel{2} \cdot \cancel{2}}{\cancel{2} \cdot \cancel{2} \cdot 3 \cdot \cancel{3}}, \quad \frac{2}{3} \cdot \frac{\cancel{3}}{5} = \frac{2}{5}$$

$$\frac{\cancel{5} \text{ ft}}{1} \cdot \frac{12 \text{ in.}}{\cancel{1} \text{ ft}} = 60 \text{ in.}$$

If a number is multiplied by a fraction equal to 1, the value of the number is not changed.

$$5 \cdot \frac{3}{3} = \frac{15}{3}$$

A **Unit Multiplier** is a fraction with a value of 1 because the numerator and denominator have equal values.

$$\frac{12 \text{ in.}}{1 \text{ ft}}$$

$$\frac{1 \text{ yd}}{3 \text{ ft}}$$

$$\frac{5280 \text{ ft}}{1 \text{ mi}}$$

$$\frac{1760 \text{ yd}}{1 \text{ mi}}$$

$$\frac{1 \text{ ft}}{12 \text{ in.}}$$

$$\frac{3 \text{ ft}}{1 \text{ yd}}$$

$$\frac{1 \text{ mi}}{5280 \text{ ft}}$$

$$\frac{1 \text{ mi}}{1760 \text{ yd}}$$

Convert <sup>8</sup>7 feet to inches.

$$\frac{7 \text{ ft}}{1} \cdot \frac{12 \text{ in}}{1 \text{ ft}} = 84 \text{ in}$$

Convert 96 inches to feet.

$$\frac{96 \text{ in}}{1} \cdot \frac{1 \text{ ft}}{12 \text{ in}} = 8 \text{ ft}$$

Convert 240 yards to feet.

$$\frac{240 \text{ yd}}{1} \cdot \frac{3 \text{ ft}}{1 \text{ yd}} = 720 \text{ ft}$$

Convert 240 feet to yards.

$$\frac{240 \text{ ft}}{1} \cdot \frac{1 \text{ yd}}{3 \text{ ft}} = 80 \text{ yd}$$

Convert 350 millimeters to centimeters.

$$\frac{350 \text{ mm}}{1} \cdot \frac{1 \text{ cm}}{10 \text{ mm}} = 35 \text{ cm}$$

***Use a unit multiplier...***

In old England 12 pence equaled 1 shilling. Merlin had 24 shillings. this was the same as how many pence?

$$\frac{12 \text{ pence}}{1 \text{ shilling}}$$

$$\frac{1 \text{ shilling}}{12 \text{ pence}}$$

$$\begin{array}{r} 24 \text{ shillings} \\ \times 12 \\ \hline 48 \\ 240 \\ \hline 288 \end{array} \cdot \frac{12 \text{ pence}}{1 \text{ shilling}} = 288 \text{ pence}$$

# Assignment

Problem Set 50 due Tuesday;  
Test #9 on Monday

\*A/B Optional: #11, 12, 25, 26