

3.2 Measuring to the Unit

Measurement Conversions



You can use unit rates, such as 3 feet per yard, to convert measurements. The following relationships may be helpful in this Problem.

Measurement Conversions

<p style="text-align: center; margin: 0;"><u>Mass</u></p> <p>1 pound = 16 ounces 1 kilogram ≈ 2.2 pounds</p>	<p style="text-align: center; margin: 0;"><u>Length</u></p> <p>1 meter = 100 centimeters 1 foot = 12 inches 1 inch ≈ 2.5 centimeters</p>	<p style="text-align: center; margin: 0;"><u>Currency</u></p> <p>1 dollar = 100 cents 1 quarter = 25 cents</p>
<p style="text-align: center; margin: 0;"><u>Capacity</u></p> <p>1 gallon = 16 cups 1 cup = 8 fluid ounces</p>	<p style="text-align: center; margin: 0;"><u>Time</u></p> <p>1 hour = 60 minutes 1 minute = 60 seconds 1 day = 24 hours 1 week = 7 days</p>	

You can also use proportions to convert measurements. For example,

$$\frac{1 \text{ cup}}{8 \text{ fluid ounces}} = \frac{x \text{ cups}}{50 \text{ fluid ounces}}$$

- What would solving this proportion tell you?



Problem 3.2

A In this Unit, you have used ratios, proportions, unit rates, rate tables, and equations to solve problems. Try to use each of these strategies at least once as you solve the following problems.

1. Kate walks 5 miles in 2 hours at a steady pace. How far can she walk in 1 hour and 15 minutes? Explain your reasoning.
2. Sean walks $\frac{3}{4}$ of a mile in 15 minutes. At the same pace, how far can Sean walk in 1 hour and 20 minutes? Explain.
3. One cup of whole milk has 8 grams of fat. How many grams of fat are in a gallon of whole milk? Explain.
4. Nathan's lawnmower uses $\frac{2}{3}$ of a tank of gas to cut three one-acre lawns. How many one-acre lawns can he cut with a full tank of gas? Explain.

Problem 3.2 *continued*

5. There are 276 Calories in 6 ounces of chicken. How many Calories are in 1 pound of chicken?
 6. Chetan makes a necklace for his sister. Twelve beads take up 5 inches of string. How many beads fit on 1 foot of string? Explain.
 7. Chetan wants to make a necklace with 50 beads. He knows that 12 beads take up 5 inches of string, but the store only sells string by the centimeter. How many centimeters should he buy? Explain.
- B** Sean walks $\frac{3}{4}$ of a mile in 15 minutes. He wants to know how far he can walk in 1 hour and 20 minutes.
1. Sean writes the expression $\frac{3}{4} \div \frac{1}{4}$ and completes the division. What information does this expression give Sean?
 2. Consider Question A, part (6). Explain how Chetan can use Sean's method to find how many beads fit on a foot of string.
 3. Davina tells Sean to use a proportion to find how far he can walk in 1 hour and 20 minutes. She writes

$$\frac{3}{1} = \frac{\frac{3}{4}}{\frac{1}{4}} = \frac{x}{1\frac{1}{3}}$$

How is Davina's strategy similar to Sean's strategy? How is it different?

4. How is Sean's strategy similar to using a rate table? How is it different?

Sean's Walking Rate

Distance (miles)	$\frac{3}{4}$	■	■
Time (hours)	$\frac{1}{4}$	1	$1\frac{1}{3}$

A C E Homework starts on page 71.