Unit 23   Solving Percent Problems Using Proportions

1. Proportions may be used to solve many percent problems.

2. Percentages may be used to compare two numbers. One number represents the part, the other number represents the whole.

The Percent Proportion

$$\frac{\%}{100} = \frac{Part\ (is)}{Whole\ (of)}$$

% represents the **percent**
is represents the **part**
of represents the **whole**

x will be used to represent the **unknown term**

A. **Finding the percent** one number is of another number
Example: 16 is what percent of 20?

In the percent proportion

x replaces **%**
16 replaces **part (is)**
20 replaces **whole (of)**

$$\frac{\%}{100} = \frac{Part\ (is)}{Whole\ (of)}$$

$$\frac{x}{100} \times \frac{16}{20}$$

$$20x = (100)(16)$$

$$20x = 1600$$

$$x = 80 \rightarrow 80\%$$

Remember:
to get x alone, divide 20 into 1,600.

B. **Finding the part** given the percentage and the whole
Example: What is 80% of 20?

In the percent proportion

80 replaces **%**
x replaces **part (is)**
20 replaces **whole (of)**

$$\frac{\%}{100} = \frac{Part\ (is)}{Whole\ (of)}$$

$$\frac{80}{100} \times \frac{x}{20}$$

$$(80)(20) = 100x$$

$$1600 = 100x$$

$$x = 16$$

Remember:
to get x alone, divide 100 into 1,600.

C. **Finding the whole** given the part and the percentage
Example: 16 is 80% of what number?

In the percent proportion

80 replaces **%**
16 replaces **part (is)**
x replaces **whole (of)**

$$\frac{\%}{100} = \frac{Part\ (is)}{Whole\ (of)}$$

$$\frac{80}{100} \times \frac{16}{x}$$

$$80x = (100)(16)$$

$$80x = 1600$$

$$x = 20$$

Remember:
to get x alone, divide 80 into 1,600.