

2.3 Percent Proportion

Aim: Know the equivalent forms of real numbers including percents.

Objectives: To solve percent problems using proportions.

Notes:

The Percent Proportion

You can represent "*the part is what % (percent) of the whole*" using the percent proportion shown below.

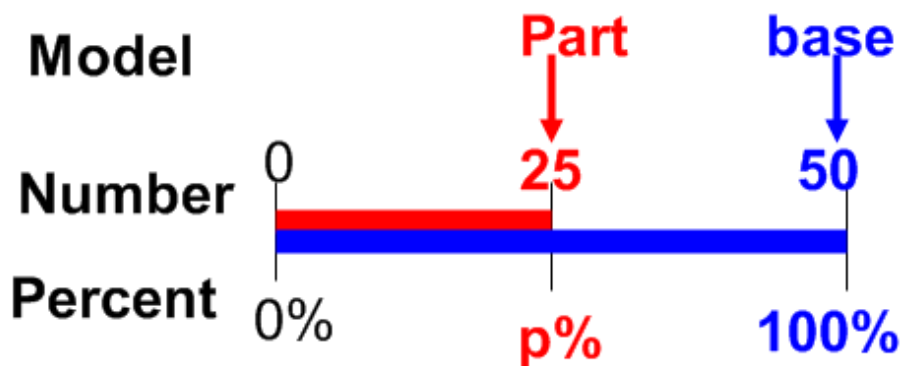
In the proportion, the denominator is the whole (of), and the numerator is a *part* (of) the whole.

$$\frac{\text{part(is)}}{\text{whole(of)}} = \frac{\%}{100} \quad \text{where } b \neq 0$$

Example: What percent
of 50 is 25?

$$\frac{25}{50} = \frac{\%}{100}$$

Model



part
whole = $\frac{97}{100}$

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$$\frac{\text{is}}{\text{of}} = \frac{97}{100}$$

Key Concept

Use the Percent Proportion

Key Zone

Type

Example

Proportion

Find the Percent

What percent of 5 is 4?

$$\frac{p}{w} = \frac{n}{100}$$

Find the Part

What number is 30% of 5?

$$\frac{p}{5} = \frac{80}{100}$$

Find the Whole

4 is 30% of what number?

$$\frac{4}{w} = \frac{80}{100}$$

In a **percent proportion**, one ratio or fraction compares part of a quantity to the whole quantity. The other ratio is the equivalent percent written as a fraction with a denominator of 100.

What percent of 56 is 42? **part(is)** and **whole(of)**

Write the percent proportion.

$$\frac{\text{part(is)}}{\text{whole(of)}} = \frac{\% (p)}{100}$$

Substitute 42 for a and 56 for b.

$$\frac{42}{56} = \frac{\% (p)}{100}$$

Use the Cross Products Property.

$$42(100) = 56p$$

Multiply.

$$4200 = 56p$$

Divide each side by 56 to isolate p.

$$\frac{4200}{56} \times \frac{56p}{56}$$

Simplify.

$$75\%$$

$$75 = p$$

42 is 75% of 56

125% of what number is 17.5?

Write the percent proportion.

$$\frac{\text{part}}{\text{whole}} = \frac{\%}{100}$$

Substitute 17.5 for the part and 125 for p%.

$$\frac{17.5}{b} = \frac{125}{100}$$

Find the cross products.

$$17.5 \cdot 100 = 125 \cdot b$$

Simplify

$$1750 = 125b$$

Divide each side by 125

$$\frac{1750}{125} = \frac{125b}{125}$$

$$14 = b$$

125% of 14 is 17.5

$$\frac{16}{23} = \dots$$

part(is)
whole(of)

Guided Practice

Find each number. Round to the nearest tenth if necessary. (Examples 1-3)

1. What percent of \$90 is \$9?

show your work →

$$\frac{9}{90} = \frac{x}{100}$$

$$\frac{90x}{90} = \frac{900}{90}$$

$$x = 10\%$$

2. What number is 2% of 35?

$$\frac{x}{35} = \frac{2}{100}$$

$$100x = 70$$

$$\frac{100x}{100} = \frac{70}{100}$$

$$x = .7$$

3. 62 is 90.5% of what number?

$$\frac{62}{x} = \frac{90.5}{100}$$

$$90.5x =$$

$$\frac{6200}{90.5}$$

$$x = 68.5$$