

Using Your Algebra Skills 11: Proportion and Reasoning

Working with similar geometric figures involves ratios and proportions. A ratio is an expression that _____ two quantities by division. You can write the ratio of quantity a to quantity b in these three ways:

$$\frac{a}{b} \qquad a \text{ to } b \qquad a:b$$

We will write ratios in fraction form. As with fractions, you can multiply or _____ both parts of a ratio by the same number to get an _____ ratio.

A proportion is a statement of equality between two _____. The equality $\frac{6}{18} = \frac{1}{3}$ is an example of a proportion. Proportions are useful for solving problems involving comparisons.

•Example 1: Solve the proportions.

a.) $\frac{M}{19} = \frac{56}{133}$

b.) $\frac{20}{135} = \frac{12}{k}$

c.) $\frac{78}{130} = \frac{15}{n}$

•Example 2: In a photograph, Dan is 2.5 inches tall and his sister Emma is 1.5 inches tall. Dan's actual height is 70 inches. What is Emma's actual height? (Solve this problem using two different methods.)

-Method 1:

-Method 2:

•Example 3: Some proportions require more algebraic manipulation to solve. Solve:

$$\frac{3x-13}{x+40} = \frac{23}{10}$$

⇒ASSIGNMENT: _____