Ratios & Proportions

Objectives
- Solve Proportions

Notes

Definition
Ratio – a comparison of two numbers by division

Ratios can be written in three different ways

1. Using the word "to"
   x to *y*
   5 to 7
   8 to 3

2. Using a colon
   x:*y*
   5:7
   8:3

3. And as a fraction in simplest form.
   $\frac{x}{y}$ $\frac{5}{7}$ $\frac{8}{3}$

Definition
Proportion – an equation stating that two ratios are equal

Examples of proportions:

$\frac{10}{5}=\frac{30}{15}$ $\frac{1}{2}=\frac{3}{6}$ $\frac{3}{4}=\frac{15}{20}$

To determine if two ratios form a proportion, check their *cross products*.

Proportions that involve a variable can be solved using cross products.

Examples

Fill in the missing number to complete the proportion.

1. $\frac{1}{5}=\frac{\quad}{25}$
2. $\frac{\quad}{6}=\frac{12}{24}$
3. $\frac{3}{\quad}=\frac{21}{28}$
4. $\frac{33}{\quad}=\frac{3}{5}$
5. $\frac{4}{9}=\frac{40}{\quad}$
6. $\frac{12}{8}=\frac{\quad}{2}$

Use cross products to determine whether each pair of ratios forms a proportion.

7. $\frac{2}{3},\frac{12}{18}$
8. $\frac{2}{7},\frac{4}{14}$
9. $\frac{3}{8},\frac{6}{12}$
10. $\frac{1.5}{3},\frac{4.5}{9}$
11. $\frac{2.5}{6},\frac{3.4}{5.2}$
12. $\frac{2.3}{3.4},\frac{0.3}{3.6}$