

Sections 3-6 and 3-7

Writing + Solving Proportions

A proportion is a statement that two ratios are equal.

A ratio uses division to compare two quantities.

$\frac{10}{12}$ is the ratio of boys to girls.

$\frac{10}{22}$ is the ratio of boys to students in the class

So $\frac{x}{15} = \frac{3}{5}$ is a proportion

ways to solve it:

① $\frac{x \div 3}{15 \div 3} = \frac{3}{5}$

so x must = 9
(equivalent fractions)

② $15 \left(\frac{x}{15} \right) = \left(\frac{3}{5} \right) 15$ ³ to isolate x
multiply both sides by 15
 $x = 9$

③ Cross Products

$\frac{x}{15} = \frac{3}{5}$
 $\frac{5x}{5} = \frac{45}{5}$
 $x = 9$

$$\text{Ex } \frac{8}{x} = \frac{6}{15}$$

$$\frac{6x}{6} = \frac{120}{6}$$

$$x = 20$$

$$\text{Ex. } \frac{4}{x} = \frac{8}{x-3}$$

$$4(x-3) = 8x$$

$$4x - 12 = 8x$$

$$\begin{array}{r} -4x \\ -4x \end{array}$$

$$\frac{-12}{4} = \frac{4x}{4}$$

$$-3 = x$$

$$\text{check } \frac{4}{x} = \frac{8}{x-3}$$

$$\frac{4}{-3} = \frac{8}{-3-3}$$

$$\frac{4}{-3} = \frac{8}{-6} \quad \text{yes it checks}$$

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Ex

$$\frac{n+0.3}{n-3.2} = \frac{9}{2}$$

$$9(n-3.2) = 2(n+0.3)$$

$$\begin{array}{r} 9n - 28.8 = 2n + 0.6 \\ -2n \quad \quad -2n \end{array}$$

$$\begin{array}{r} 7n - 28.8 = 0.6 \\ + 28.8 \quad + 28.8 \end{array}$$

$$\frac{7n}{7} = \frac{29.4}{7}$$

$$n = 4.2$$

HW p 171-172 4-40 even

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