

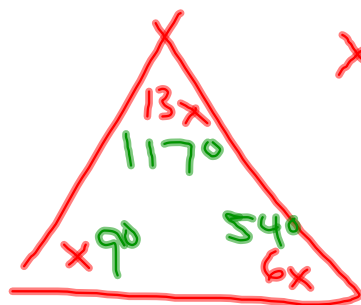
7.1 Ratios & Proportions

Ratio: compares 2 numbers
using division.

Ex: slope.

$$m = \frac{y_1 - y_2}{x_1 - x_2} = \frac{\text{rise}}{\text{run}}$$

Ex: the ratio of the \angle measures of a Δ are $1:6:13$. Find each \angle .



$$x + 6x + 13x = 180$$

$$\frac{20x}{20} = \frac{180}{20}$$

$$x = 9$$

Proportions : equations w/
2 ratios set equal to
each other.

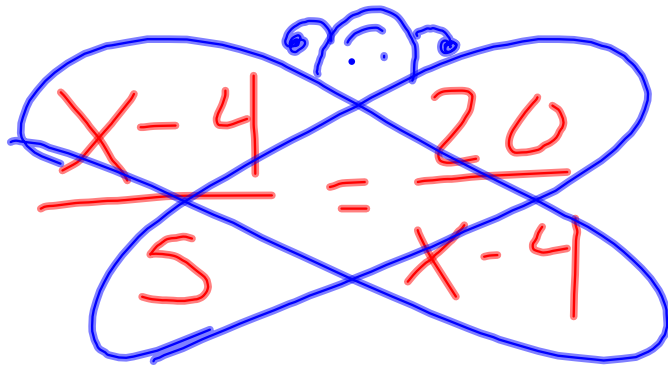
$$\frac{a}{b} = \frac{c}{d}$$

a + d are extremes
b + c are means

Ex: $\frac{7}{x} = \frac{56}{72}$

$$\frac{504}{56} = \frac{56x}{56}$$

$$x = 9$$



~~$$\frac{x-4}{5} = \frac{20}{x-4}$$~~

$$\sqrt{(x-4)^2} = \sqrt{100}$$

$$x-4 = \pm 10$$

+4 +4

$$x = 4 \pm 10$$

$$\boxed{x = 14 \text{ or } -6}$$

Properties of Proportions

The proportion $\frac{a}{b} = \frac{c}{d}$ is equivalent to:

$$\frac{a}{b} = \frac{c}{d}$$

$$ad = bc$$

$$\frac{b}{a} = \frac{d}{c}$$

$$\frac{a}{c} = \frac{b}{d}$$

$$\frac{1}{2} = \frac{4}{8}$$

$$1 \cdot 8 = 2 \cdot 4$$

$$\frac{2}{1} = \frac{8}{4}$$

$$\frac{1}{4} = \frac{2}{8}$$

$18x = 24y$, find the ratio of x to y

$$\frac{x}{y} = \frac{24}{18} = \frac{4}{3} \quad \frac{a}{b} = \frac{c}{d} \quad ad = bc$$

Marta is making a scale drawing of her bedroom. Her rectangular room is $12\frac{1}{2}$ ft. wide and 15 ft. long.

On her drawing, the width is 5 in.

What is the length?

$$\frac{\text{width}}{\text{length}} = \frac{12\frac{1}{2}}{15} = \frac{5}{x}$$

$$\frac{12\frac{1}{2}x}{12\frac{1}{2}} = \frac{75}{12\frac{1}{2}}$$

$$x = 6 \text{ in}$$

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odds extra credit.