

6-1 Proportions

Proportion:

*An equation stating that two ratios are equal

Cross Products:

* When you cross multiply the proportions

Means & Extremes:

*The parts of the proportion.

$$\begin{array}{c} \text{Extreme} \\ \hline \text{Mean} \end{array} \quad \begin{array}{c} \text{Mean} \\ \hline \text{Extreme} \end{array}$$

Property of Proportions:

*For any numbers a and c and any nonzero numbers b and d , $\frac{a}{b} = \frac{c}{d}$ if and only if $ad=bc$

**The cross products need to be equal*

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Ratio:

*Comparison of two quantities

*Can be written as $a:b$ a to b or $\frac{a}{b}$

*Extended ratios can be used to compare three or more numbers
($a:b:c$)

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Example 1:

The total number of students who participate in sports programs at Central High School is 520. The total number of students in the school is 1850. Find the athlete-to-student ratio to the nearest tenth.

$$\frac{520}{1850} \approx 0.281 = 0.3$$

$$\frac{0.3}{1} \text{ or } 0.3:1$$

Example 2

In a triangle, the ratio of the measures of three sides is 5:12:13, and the perimeter is 90cm. Find the measure of the shortest side of the triangle.

$$5x + 12x + 13x = 90$$

$$(5 + 12 + 13)x = 90$$

$$\frac{30x = 90}{\frac{30}{30} \quad \frac{90}{30}}$$

$$x = 3$$

shortest side is $5x$

$$5(3) = 15 \text{ cm}$$

