

Similarity

81 Proportions

Ratio

- Comparison of two values of the same unit

$$\frac{3 \text{ boys}}{7 \text{ girls}}$$

$$\frac{8 \text{ ft}}{27 \text{ ft}}$$

$$\frac{a}{b}$$

$$a:b$$

a to b

b cannot be 0

Converting units

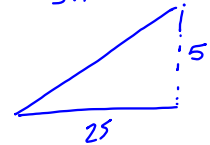
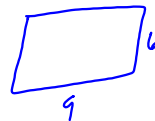
$$\frac{7 \text{ ft}}{36 \text{ in}} \div 3 = \frac{7 \text{ ft}}{3 \text{ ft}} = \frac{84 \text{ in}}{36 \text{ in}}$$

$$\frac{300 \text{ cm}}{4 \text{ m}} = \frac{3 \text{ m}}{4 \text{ m}}$$

Scale Ratio

$$3:2$$

$$5:1$$



Proportions

Two ratios that have the same value

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

means extremes
 $a \cdot d = b \cdot c$

Cross Product Property

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

$$ad = bc$$

$$\frac{4}{7} = \frac{x}{28} \Rightarrow \frac{7x}{7} = \frac{112}{7} \Rightarrow x = 16$$

$$\frac{3}{y+2} = \frac{2}{y}$$

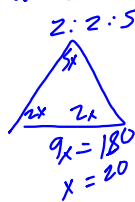
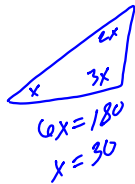
$$3y = 2(y+2)$$

$$\begin{array}{r} 3y = 2y + 4 \\ -2y \quad -2y \\ \hline y = 4 \end{array}$$

Reciprocal Property
 If $\frac{a}{b} = \frac{c}{d}$ then $\frac{b}{a} = \frac{d}{c}$
 $\frac{ad}{c} = \frac{bc}{c}$

Part:Part or Part:total

Angles in a triangle have
 a ratio of 1:2:3



There are 37 girls and
 23 boys in 11th grade
 what is the ratio of boys
 to total students in 11th grade

$$\frac{23}{37+23} = \frac{23}{60}$$

? 461-463
 2-60 even