

Proportions

Thursday, December 12, 2019 8:55 AM

A proportion is an equation that shows 2 equal fractions.

eg $\frac{2}{3} = \frac{4}{6}$

$$2:3 = 4:6$$

Cross products of proportions are always equal.

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

$$\frac{3}{7} = \frac{9}{21}$$

$$\frac{3}{5} = \frac{12}{\square}$$

$$3 \cdot \square = 5 \times 12$$

$$\square = \frac{5 \times 12}{3} = \frac{60}{3} = 20$$

$$\frac{3}{5} = \frac{12}{\square}$$

$\times 4$

$$\square = 5 \times 4 = 20$$

$$\frac{6}{7} = \frac{18}{x}$$

$$\frac{6x}{6} = \frac{18 \cdot 7}{6}$$

$$x = \frac{126}{6} = 21$$

$$\frac{6}{7} = \frac{18}{x}$$

$\times 3$

$$x = 7 \times 3 = 21$$

Try: Solve

$$\frac{1}{2} = \frac{x}{6}$$

$$\frac{1}{5} = \frac{1}{x}$$

$$a) \frac{2}{3} = \frac{12}{x}$$

$$x = 3 \times 6 \\ = 18$$

$$b) \frac{3}{y} = \frac{15}{35}$$

$$y = 35 \div 5 \\ y = 7$$

Eg ~~$\frac{5}{x} = \frac{2}{3}$~~

$$x = \frac{5 \times 3}{2}$$

$$x = \frac{15}{2} = 7\frac{1}{2}$$

Try: Solve

① ~~$\frac{2}{x} = \frac{15}{40}$~~

$$x = \frac{2 \times 40}{15}$$

$$x = \frac{80}{15} = \frac{16}{3} = 5\frac{1}{3}$$

$$x = 5.\bar{3}$$

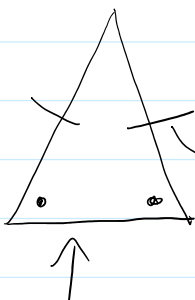
② $\frac{4}{5} = \frac{x}{32}$

$$x = \frac{4 \cdot 32}{5}$$


$$x = \frac{128}{5}$$

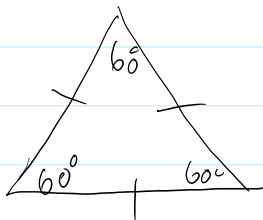
$$x = 25.6$$

$$\text{or } 25\frac{3}{5}$$



means both sides with this mark have the same length.

 This means now the same length.
Isosceles triangle (has 2 = sides + 2 = angles)



Equilateral triangle (has 3 = sides and 3 equal angles)

Angles in a triangle add to 180° .

Word Problem Practice

Sean is 3 years older than Billy.
2 years ago he was twice as old.
How old is each boy now?

$$\begin{aligned} P &= 2l + 2w \\ P &= 2(7) + 2(5) \\ &= 14 + 10 \\ P &= 24 \text{ m} \end{aligned}$$

$$\begin{aligned} P &= 2(7) + 2(10) \\ &= 14 + 20 \\ &= 34 \text{ m} \end{aligned}$$