

If it takes 6 people six days to dig 6 holes, how long will it take one person to dig half a hole?

3.5 Ratios & Proportions

Ratio - Compares 2 things with division

ex. Miles per hr, \$ per day

a to b

300 to 7

a:b

300:7

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

$$\frac{300}{7}$$

Proportions - Shows 2 ratios are equal

$$\frac{6 \text{ Students}}{2 \text{ teachers}} = \frac{12 \text{ Students}}{4 \text{ teachers}}$$

Example

The Wild have 14 home & 10 away games.

a) Write ratio for home to away games
(fraction) $\frac{14}{10} \div 2$ $\left(\frac{7}{5}\right) \rightarrow \frac{14}{10} \div 2$ or $14:10$

b) Write ratio for home to total games.
(fraction)

$$\frac{\text{home}}{\text{total}} = \frac{14}{14+10} = \frac{14}{24} \div 2 = \frac{7}{12}$$

c) How many home games will we get for 13 away games?

*Think: How many home games? away games?
proportion!

$$\frac{7}{5} = \frac{x}{13} \quad \text{Cross-multiply}$$

$$7 \cdot 13 = 5 \cdot x$$

$$91 = 5x$$

$$\frac{91}{5} = \frac{5x}{5}$$

$$18.2 = x$$

18 or 19 games

You have about 18 games

Example

Solve for x

1) $\frac{15}{4} = \frac{x}{12}$

$$15 \cdot 12 = 4 \cdot x$$

$$\frac{180}{4} = \frac{4x}{4}$$
$$45 = x$$

4 out of 12

$$4:12 \quad 4 \text{ to } 12$$

2) $\frac{7}{3} = \frac{28}{x}$

$$7 \cdot x = 3 \cdot 28$$

$$\frac{7x}{7} = \frac{84}{7}$$

$$x = 12$$

$$\frac{4}{12} \div 4 = \frac{1}{3} \quad \frac{28}{6} = \frac{1}{3}$$

Homework

1) $\frac{2}{5} = \frac{x}{3}$

2) $\frac{c}{8} = \frac{11}{4}$

3) $\frac{16}{7} = \frac{m}{21}$

4) $\frac{5}{8} = \frac{t}{24}$

5) $\frac{v}{20} = \frac{9}{4}$

6) 3 is to 8 as x is to 32

7) x is to 4 as 8 is to 16

Write in simplest form

8) 14 to 18

9) $\frac{24}{25}$

10) 28:32