

9-4 Using Proportions

Proportion - expresses 2 or more equal ratios

Ex Determine if each pair of ratios form a proportion.

$$1) \frac{3}{7} \neq \frac{5}{14}$$

NO
Treat like equivalent frac.

2)

$$\frac{6}{3.2} = \frac{9}{4.8}$$

$$6 \times 4.8 = 3.2 \times 9$$
$$28.8 = 28.8$$

YES

* cross mult
* product goes
on side with
numerator
used

To solve proportions:

1) $\frac{c}{35} = \frac{5 \cdot 3}{5 \cdot 7}$ * Treat like equivalent frac. OR

$c = 15$

$\frac{c}{35} = \frac{3}{7}$

$7c = 35 \cdot 3$

*cross mult. + divide

$\frac{7c}{7} = \frac{105}{7}$

$c = 15$

$$\begin{array}{r} 15 \\ 7 \overline{) 105} \\ \underline{- 71} \\ 35 \\ \underline{- 35} \\ 0 \end{array}$$

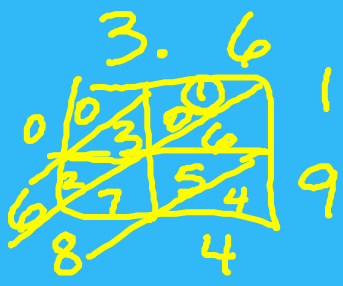
$$2) \quad \frac{95}{3.6} = \frac{19}{n}$$

↙ ↘

$$95n = 3.6 \times 19$$

$$95n = \frac{68.4}{95}$$

$n = 0.72$



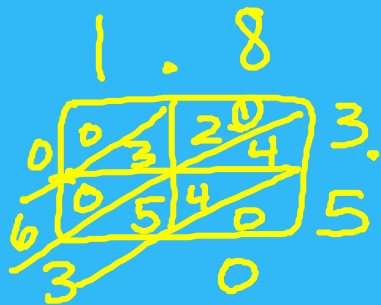
$$\begin{array}{r} 00.72 \\ 95 \overline{) 68.40} \\ \underline{-66.5} \\ 190 \\ \underline{-190} \\ 0 \end{array}$$

$$3) \frac{1.4}{1.8} = \frac{3.5}{W}$$

$$1.4W = 1.8 \times 3.5$$

$$\cancel{1.4}W = \frac{6.30}{\cancel{1.4}}$$

$$W = 4.5$$



0630

$$1.4 \overline{) 6.30} \\ \underline{56} \\ 70 \\ \underline{70} \\ 0$$

$$4) \frac{23 \cdot 5}{20 \cdot 5} = \frac{115}{m}$$

$$\boxed{100 = m}$$

$$5) \frac{25}{n} = \frac{\cancel{12}^1}{\cancel{48}_4}$$

$$25 \cdot 4 = 1n$$

$$\boxed{100 = n}$$

*Look to
see if can
simplify
frac. 1st

Proportions in word prob.

*must be set up like $\frac{x_1}{y_1} = \frac{x_2}{y_2}$

1) 3 pounds for \$1.50
x pounds for \$4.50

$$\frac{\text{pounds}}{\$} \frac{3}{1.50} = \frac{x}{4.50}$$

2) 2.7 liters at m dollars
3 liters at \$7.00

$$\frac{\text{liters}}{\$} = \frac{2.7}{m} = \frac{3}{7}$$

3) A recipe calls for $4\frac{1}{2}$ cups flour for 72 cookies.
How many cups of flour would be needed for
48 cookies?

$$\frac{\text{cups}}{\text{cookies}} = \frac{4\frac{1}{2}}{72} = \frac{c}{48}$$