

16 October 2014

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1. $3x + 12 = 8x - 18$

$$\begin{array}{r} -3x \quad -3x \\ \hline \end{array}$$

$$\begin{array}{r} 12 = 5x - 18 \\ +18 \quad +18 \\ \hline \end{array}$$

$$\frac{30 = 5x}{5 \quad 5}$$

$$x = 6$$

2) $2(4x+1) - 2x = 9x+1$

$$8x+2-2x=9x+1$$

$$6x+2=9x+1$$

$$6x+1=9x$$

$$\begin{array}{r} -6x \quad -6x \\ \hline 1 = 3x \\ \frac{1}{3} = \frac{3x}{3} \quad x = \frac{1}{3} \end{array}$$

3. Find the value of x so that the figures have the same area.

Area of a Triangle = $\frac{1}{2}bh$

Area of a Rectangle = bh

Triangle

Rectangle

$$\frac{1}{2}(x+4)4$$

$$A = 6(x)$$

$$2(x+4)$$

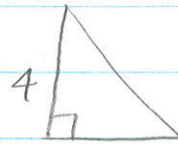
$$2x+8 = 6x$$

$$\begin{array}{r} -2x \quad -2x \\ \hline \end{array}$$

$$8 = 4x$$

$$\frac{8}{4} = \frac{4x}{4}$$

$$2 = x$$



$x+4$

6

$$\frac{1}{2}(2+4)4 = 6(2)$$

$$2(2+4) = 12$$

$$2(6) = 12$$

$$12 = 12$$

Notes 2.6 Ratio + proportions

Ratio: 2:3, $\frac{2}{3}$, 2 to 3

Proportion: two ratios that have been set equal to each other.
proportion is an equation that should be solved.

ex: $\frac{8}{20} = \frac{2}{5}$, $\frac{x}{10} = \frac{1}{2}$

1. Determine whether $\frac{7}{8}$ and $\frac{49}{56}$ are equivalent ratios. Justify on your paper

$$7 \cdot 7 = 49$$

$$8 \cdot 7 = 56$$

2. $\frac{5}{10}$ & $\frac{40}{49}$ NOT equivalent ratios

3. Solve the proportion: $\frac{n}{12} = \frac{3}{8} \Rightarrow \frac{n}{1} \cdot \frac{12}{12} = \frac{3}{8} \cdot \frac{12}{1} = n \cdot \frac{36}{8} \Rightarrow n = \frac{9}{2}$
OR 4.5
 $n = 4.5$

4. solve the proportion $\frac{x+4}{12} = \frac{3}{4} \cdot \frac{12}{1}$ $\frac{5+4}{12} = \frac{3}{4}$
- $$\begin{array}{r} x+4 = \frac{36}{4} \\ x+4 = 9 \\ -4 \quad -4 \\ \hline x = 5 \end{array}$$
- $$\begin{array}{r} 3 : \frac{9}{12} = \frac{3}{4} \\ 3 : 12 = \frac{3}{4} \\ \frac{3}{4} = \frac{3}{4} \end{array}$$

$$5. \frac{r}{9} = \frac{7}{10} \Rightarrow \frac{9}{1} \cdot \frac{r}{9} = \frac{7}{10} \cdot \frac{9}{1} \Rightarrow r = \frac{63}{10}$$

$$6. \frac{x-6}{10} = \frac{5}{8} \Rightarrow \frac{10}{1} \cdot \frac{x-6}{10} = \frac{5}{8} \cdot \frac{10}{1} \Rightarrow x-6 = \frac{50}{8} \Rightarrow x-6 = 10 \Rightarrow x = 16$$

$$7. \frac{8 \text{ pedels}}{5 \text{ turns}} = \frac{1 \cdot P}{2435} \Rightarrow \frac{2435 \cdot 8 P}{5 \cancel{t}} = \frac{P}{2435 \cancel{t}} \cdot \frac{2435 \cancel{t}}{1}$$

$$\frac{19480 P/\cancel{t}}{5 \cancel{t}} = P = 3896 = P$$

$$8) \frac{30 \text{ m}}{4 \text{ h}} = \frac{x \text{ m}}{6 \text{ h}} \cdot \frac{6 \text{ h}}{1}$$

$$\frac{180 \text{ m/h}}{4 \text{ h}} = x \text{ m}$$

$$\frac{45}{6 \text{ h}} = m$$

$$9.) \frac{4 \text{ m}}{5 \text{ in}} = \frac{m}{2 \frac{1}{2} \text{ in}} \cdot \frac{2.5}{1}$$

$$\frac{102.5 \text{ m/in}}{5 \text{ in}} = m$$

$$20.5 = m$$

$$10.) \frac{3c}{5 \text{ m}} = \frac{c}{3 \text{ h}} \xrightarrow{\cdot 180} \frac{3c}{5 \text{ m}} = \frac{c}{180 \text{ m}} \Rightarrow \frac{540 \cancel{c}/\text{m}}{5 \text{ m}} = \frac{c}{180 \cancel{\text{m}}} \Rightarrow c = 108$$

$60 \cdot 3 = 180 \text{ m}$

$$11.) \frac{5 \text{ cm}}{2 \text{ m}} = \frac{28.5 \text{ cm}}{m} \cdot \frac{2 \text{ m}}{1}$$

$$5 \text{ cm} = \frac{57 \text{ cm/m}}{m}$$

$$11.4 \text{ m}$$

Homework 2.4

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