Warm-Up:

Solve the following equations for the variable.

1) $2w - 10 = 5w - 7$

$-2w \quad -2w$

$-10 = 3w - 7$

$+7 \quad +7$

$\frac{-3}{3} = \frac{3w}{3}$

$w = 1$

2) $\frac{x}{4} = \frac{13}{2}$

$\frac{52}{2} = \frac{2x}{2}$ $\quad x = 26$

3) $7 + 2(y + 1) = 2y + 9$

$7 + 2y + 2 = 2y + 9$

$-2y \quad -2y$

$7 + 2 = 0 + 9$

$9 = 9$ Inf. many Solutions

36, 30, 34

30) n = 1st integer

$n+2$ = 2nd integer

$n+4$ = 3rd integer

$3(n+4) = 2n + 38$

$3n + 12 = 2n + 38$

$-2n \quad -2n$

$n + 12 = 38$

$-12 \quad -12$

$n = 26$ 26, 28, 30

34) $-3(2n - 5) = 0.5(-12n + 30)$

$-6n + 15 = -6n + 15$

Inf. Many Solutions

36) nail length $= 1 + \frac{1}{4}(x - 2)$

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

$\frac{5}{2} = 1 + \frac{1}{4}x - \frac{1}{2}$

$\frac{5}{2} = \frac{1}{4}x + \frac{1}{2}$

$-\frac{1}{2} \quad -\frac{1}{2}$

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

$8 = x$

8-penny nail

Section 2-6: Ratios and Proportions

A ratio is a comparision of two numbers through division.

Ratios can be expressed several ways.

x to y $\quad x:y \quad \frac{x}{y}$

Whenever two ratios are equal to each other, it is called a proportion.

In a proportion, the cross products are equal to each other.

$\frac{a}{b} = \frac{c}{d}$ so, $ad = bc$

Examples:

1) Determine whether the following ratios determine a proportion.

$\frac{7}{8} \times \frac{49}{56}$ Yes

$392 = 392$

Use cross products to determine whether each pair of ratios forms a proportion.

2) $\frac{0.25}{0.6} \times \frac{1.25}{2}$ No

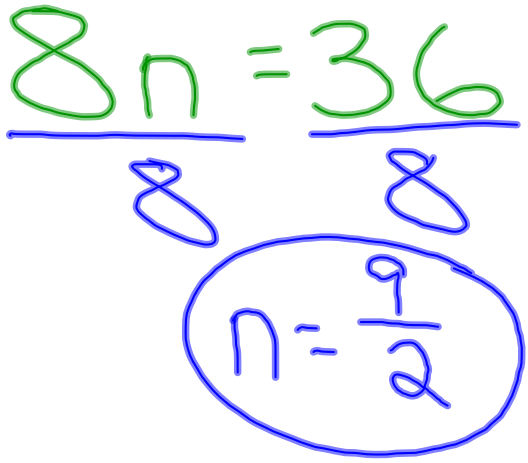
$.5 \neq .75$

3) $\frac{4}{5} = \frac{16}{20}$ Yes

$80 = 80$

Examples:
4) Solve the proportion

$$\frac{n}{12} = \frac{3}{8}$$



When two different measurements are put into a ratio, the result is a rate.

A ratio used to compare a size of a model to the actual size of an object is called a scale.

Examples:

5) The gear on a bicycle is 8:5. This means that for every 8 turns of the pedals, the wheels go around 5 times. Suppose the bicycle wheel turns about 2435 times during a trip. How many times would you have to crank the pedals during the trip?

8 pedal turns : 5 wheel turns

$$\frac{n}{8} \times \frac{2435}{5}$$

$$\frac{8}{5} \times \frac{n}{2435}$$

$$\frac{5n}{5} = \frac{19480}{5}$$

$n = 3896$ pedal turns

Examples:

6) In a road atlas, the scale for the map of Connecticut is 5 inches = 41 miles. The scale for the map of Texas is 5 inches = 144 miles. What are the distances represented by 2 1/2 inches on each map?

$$\frac{5}{41} = \frac{2\frac{1}{2}}{CT}$$

$CT = 20.5$ mi

$$\frac{5}{144} = \frac{2\frac{1}{2}}{TX}$$

$TX = 72$ mi

Homework: pg. 109-110 #10-26 even, 27-30 all,
32, 38, 41, 42

Section 2-6 Vocab