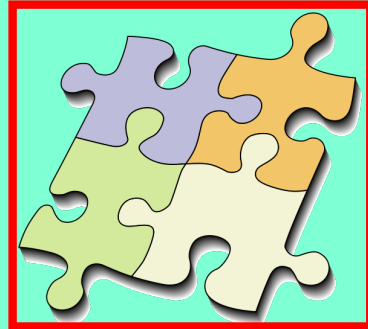**Math 107**

Fall 2017

Lecture 4

Ch. 1   Example:

Translate only:

4 times some number   is equal to

twice the difference of the number and 8.

Let x be the number,

$$4x = 2(x - 8)$$

$$x^3 + x^2 = -12$$

Cube of some number increased by

square of the number is equal to -12.

Ch. 3   Review

Solve $\dfrac{2.5}{x} = \dfrac{1}{8}$

Proportion

$x \cdot 1 = 8(2.5)$

$\boxed{x = 20}$ $\Rightarrow \{20\}$

Solve $\dfrac{2x + 5}{x - 3} = \dfrac{3}{2}$

Hint: Cross-Multiply

$2(2x + 5) = 3(x - 3)$

$4x + 10 = 3x - 9$

$4x - 3x = -9 - 10$

$\boxed{x = -19}$ $\{-19\}$

A 4-ft tall tree has a shadow of 15 ft. A tall building has a shadow of 50 ft. use proportion to find the height of the building.

$\dfrac{4 \text{ ft tall}}{15 \text{ ft shad.}} = \dfrac{x \text{ ft tall}}{50 \text{ ft shad.}}$

$\dfrac{4}{15} \Join \dfrac{x}{50}$

$15x = 4(50)$

$x = \dfrac{4(50)}{15}$

$x = \dfrac{200}{15}$

$x = 13.\overline{3}$

About 13.3 ft tall

$4.75 for 8 lb. of oranges.
How much for 20 lb. of oranges?

$$\frac{\$4.75}{8 \text{ lb.}} = \frac{\$x}{20 \text{ lb.}}$$

$$\frac{4.75}{8} \diagup \frac{x}{20}$$

$$8x = 20(4.75)$$

$$x = \frac{20(4.75)}{8}$$

$$x = 11.875$$

About $11.88

Ch. 2   Review by using Proportion

$$\frac{P}{100} = \frac{Part}{whole}$$

"whole comes after of"

6% of what number is 1500?

$$\frac{P}{100} = \frac{Part}{whole}$$

$$\frac{6}{100} = \frac{1500}{x}$$

6% of 25000 is 1500

$$6x = 100(1500)$$

$$x = \frac{100(1500)}{6} \qquad x = 25000$$

what percent of 18000 is 810?

$$\frac{P}{100} = \frac{Part}{whole} \qquad \frac{P}{100} = \frac{810}{18000}$$

$$18000P = 100(810)$$

4.5% of 18000 is 810.

$$P = \frac{81000}{18000}$$

$$P = 4.5$$

Last chance: wednesday for

WP 1, WP2, WP3

No work turned in → ? ? ?

Ch. 4   Parts & Total

There are 38 students in a classroom.
The # of females was 2 fewer than
the # of males. How many of each?

Parts

Males x

Females $x-2$

Total is 38

$\boxed{20 \text{ Males } \dot{\varepsilon} \ 18 \text{ Females}}$

Males + Females $=38$

$x \quad + \quad x-2 \quad =38$

$2x -2 =38$

$2x = 38 +2$

$2x = 40$

$x = \dfrac{40}{2}$

$x = 20$

Mary purchased 52 pens.

Some red $\dot{\varepsilon}$ some blue. No other color.

# of red pens was $\boxed{1 \text{ more than}}$ twice # of blue pens. How many of each?

Parts

Red $2x+1$

Blue x

Total is 52

Red + Blue $=52$

$2x+1 + x =52$

$3x +1 =52$

$3x = 52-1$

$3x=51$

$x = \dfrac{51}{3}$

$\boxed{x=17}$

$\boxed{17 \text{ blue pens} \\ 35 \text{ Red pens}}$

In a small town in OK, 2100 people voted in the last elections.

# of Dem. was 10 times # of Ind.

# of Rep. was 600 more than # of Ind.

How many of each?

Total 2100

Parts Dem., Ind., Rep.

$$\underbrace{\text{Dem.}}_{\downarrow} + \underbrace{\text{Ind.}}_{\downarrow} + \underbrace{\text{Rep.}}_{\downarrow} = 2100$$

$$10x + x + x+600 = 2100$$

$$12x + 600 = 2100$$

$$12x = 2100 - 600$$

$$12x = 1500$$

$$x = \frac{1500}{12}$$

$$\boxed{x = 125}$$

125 Independents,

1250 Democrats, and

725 Republicans.