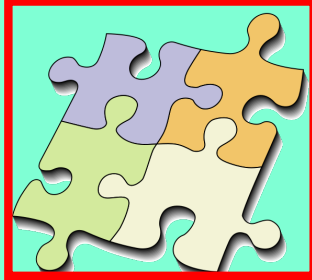**Math 107**

Fall 2017

Lecture 2

Ch. 1   Basic Translation

#19   add   and 1 at the end.

Translate   only:

3 times the sum of x and 4   is equal to

twice the difference of x and 10.

$$3(x + 4) = 2(x - 10) \checkmark$$

Translate only

Square of some number   increase by 12

is equal to   7 times the number.

Let x be the number,

$$x^2 + 12 = 7x \quad \checkmark$$

Translate into words:

$4x = 10 - x^2$

The product of 4 and some number is equal to 10 less square of the number.

Translate only:

The quotient of 10 and Some number

is equal to the quotient of the number and

10.

$$\frac{10}{x} = \frac{x}{10}$$

Let x be the number.

Translate only:

The difference of Some number and

Square root of the number is equal to 6.

Let x be the number

$$x - \sqrt{x} = 6$$

The ratio of Some number and 2 more than the number is equal to the number less −5.

$$\frac{x}{x+2} = x - (-5)$$

My Math 115 Students → WP 1
                              Due tomorrow
everyone else → WP 1   Due next Wed.
  No School on Monday.

Ch. 3 (word Problems)   Proportion

Ratio of a to b is $\frac{a}{b}$

Ratio of a and b is $\frac{a}{b}$

Ratio of 12 and 150 is $\frac{12}{150}$

when two ratios are equal to each other, we have Proportion.

$$\frac{A}{B} = \frac{C}{D}$$ Proportion

Ratio of x to 3 is the same as the ratio of 2 to 5.

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

Ratio of Some number to 5 less than the number is equal to the ratio of 2 to 3. Translate

$$\frac{x}{x-5} = \frac{2}{3}$$

25 muffins needs 4 cups of Sugar.

How many cups of Sugar for 80 muffins?

$$\frac{25 \text{ Muffins}}{4 \text{ Cups of Sugar}} = \frac{80 \text{ Muffins}}{x \text{ cups of Sugar}}$$

$$\frac{25}{4} = \frac{80}{x}$$

How to Solve Proportion

1) Cross - Multiply

2) Solve

$$\frac{x}{4} = \frac{75}{10}$$

$$10x = 4(75)$$

$$x = \frac{4(75)}{10} \qquad \boxed{x = 30}$$

It took Lisa 40 minutes to type 3 pages. At this rate, how long does it take her to type 10 pages?

$$\frac{40 \text{ Mins.}}{3 \text{ Pages}} = \frac{x \text{ Mins}}{10 \text{ Pages}} \qquad \frac{40}{3} \times \frac{x}{10}$$

Cross - Multiply

About 133 Minutes

$$3x = 40(10)$$

$$x = \frac{40(10)}{3}$$

$$x = 133.\overline{3}$$

A 10-ft tall building had a shadow of 25 ft.

Another tall building had a shadow of 120 ft. How tall is this building?

$$\frac{10 \text{ ft tall}}{25 \text{ ft shad.}} = \frac{x \text{ ft tall}}{120 \text{ ft shadow}}$$

$$\frac{10}{25} = \frac{x}{120}$$

$$25x = 10(120)$$

$$x = \frac{10(120)}{25}$$

48 ft tall $x = 48$

In a crowd of 400 people, 120 of them were in favor of gun control.

How many will be in favor of gun control in a city of 50,000 people?

$$\frac{400 \text{ People}}{120 \text{ Gun}} = \frac{50000 \text{ People}}{x \text{ Gun}}$$

$$\frac{400}{120} = \frac{50000}{x}$$

$$400x = 120(50000)$$

$$x = \frac{120(50000)}{400}$$

$$x = 15000$$

15000 People

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