

8/24/2012 - Sec 2.2

Math 1010

Contradiction: NO Solution

$$5(x+2) - 2(x+1) = 3x + 1$$

$$5x + 10 - 2x - 2$$

$$\begin{array}{r} 3x + 0 \\ -3x \quad -8 \end{array} = \begin{array}{r} 3x + 1 \\ -3x \quad -8 \end{array}$$

$$0 \neq -7 \leftarrow \text{false}$$

$\emptyset$  or NO solution

# 80

$$\begin{array}{l} \underline{\underline{-3^2}} \\ - (3 \cdot 3) \\ -9 \end{array} \quad \text{or} \quad \begin{array}{l} (-3)^2 \\ (-3)(-3) \\ 9 \end{array}$$

## Sec 2.2 Formulas and Percents

A mathematical model is an equation or inequality that describes a real situation

Models for many applied problems already exist. We often call them Formulas

$$\text{Area} = x^2 \leftarrow \text{area of square}$$

$$A = \frac{1}{2}bh \leftarrow \text{area of triangle}$$

$$d = r t$$

$\begin{array}{c} \leftarrow \text{distance} \\ \uparrow \\ \text{Rate} \end{array}$   $\leftarrow \text{time}$

Resolve for  $r$

$$\frac{d}{t} = \frac{r t}{t}$$

$$\frac{d}{t} = r, \quad r = \frac{d}{t}$$

# Steps for Solving for a specified Variable

1. If the equation involves fractions, multiply by LCD to get rid of them
2. Gather every term of the desired variable on one side and all terms without to the other.
3. Undistribute the variable and divide the rest to the other side

$$\begin{array}{r} \downarrow \\ P = 2L + 2W \\ -2W \quad -2W \end{array} \quad \text{solve for } L$$

$$\frac{P-2W}{2} = \frac{2L}{2} \quad L = \frac{P-2W}{2}$$

$$\begin{array}{r} 2x + 7y = 5 \\ -2x \quad -2x \end{array} \quad \text{solve for } y$$

$$\frac{7y}{7} = \frac{-2x + 5}{7}$$

$$\boxed{y = \frac{-2x + 5}{7}}$$

$$\# 23 \quad d = r t \quad d = 520 \text{ mi}$$

$$\frac{520}{10} = \frac{r(10)}{10}$$

$$t = 10 \text{ hr}$$

$$r = ?$$

$$52 \frac{\text{mi}}{\text{hr}} = r$$

$$r = \frac{d}{t}$$

Percents means per hundred

$$1\% = \frac{1}{100} = .01$$

$$15\% = \frac{15}{100} = .15$$

How to calculate

$$\text{Percent in decimal form} = \frac{\text{Partial amount}}{\text{whole amount}}$$

I have 12 lbs of candy, 5 lbs is peanut M & Ms, What percent is the Peanut M & Ms

$$\text{Percent} = \frac{5}{12} = .41\bar{6} = 41.\bar{6}\%$$

% of whole is partial

Percent \* whole = partial

15% of \$1200, how much to pay

$$.15 * 1200 = \$180$$

#34

35% acid, total 40 L

how many L of Acid

how many L of Water

$$\% = \frac{\text{Partial}}{\text{whole}}$$

or  $\% * \text{whole} = \text{Partial}$

$$40(.35) = \frac{P}{40} \cdot 40$$

$$14 = P$$

14 L of Acid

26 L of Water

Percent to express change

$$\% \text{ of change} = \frac{\text{amount of change}}{\text{original amount}}$$

← (often found from subtraction)

$$X = \frac{264}{1200} = 0.22$$

Originally: \$1200

22%

marked up to \$1464

amount changed? \$264

## Sec 2.3 Applications of Linear Equations

Ex of Verbal phrases

5 added to a number is 13

$$X + 5 = 13 \quad \text{or} \quad 5 + X = 13$$

7 less than two times a number  
is 15

$$2x - 7 = 15$$

Equations can be solved

Expressions get simplified