

7.1 – Word Problems

System of Linear Equations – Two equations of linear functions in the same variables.

Example: Create a linear system to model each situation

For each situation:

- Identify the unknowns *← typically found in last sentence of the word problem*
- Assign a variable to represent each unknown
 - Let $x =$ _____
 - Let $y =$ _____
- Write 2 equations, containing x and y , that represent the situation.

- 1) The admission to a high school musical is \$5 for students and \$9 for adults. During a performance, 32 people attended and \$180 was collected. How many students and adults attended?

Let $x =$ # of students

Let $y =$ # of adults

Eqn1: Total people

Eqn2: Total money

$$x + y = 32$$

$$5x + 9y = 180$$

- 2) Yari invested a total of \$2000 in two separate accounts. Account "A" gives 8% interest and account "B" gives 10% interest on money invested. At the end of the investment the total interest earned from both accounts was \$190. How much was initially invested in each account?

Let $x =$ amount invested at 8%

Let $y =$ amount invested at 10%

Eqn1: Total Invested

Eqn2: Total Interest Earned

$$x + y = 2000$$

$$0.08x + 0.10y = 190$$

(change % to decimal)

- 3) Corina has \$31 in \$2 and \$5 bills. There are 11 bills in total. How many of each does she have?

Let $x =$ # of \$2 bills

Let $y =$ # of \$5 bills

Eqn1: Total bills

Eqn2: Total money value

$$x + y = 11$$

$$2x + 5y = 31$$

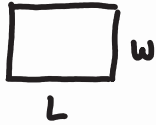
4) The Perimeter of the B.C. flag is 16ft. Its length is 2ft longer than its width. Find its length and width.

Let $W =$ width of the flag

Let $L =$ length of the flag

Eqn1: Perimeter \rightarrow distance around an object

Eqn2: Relate W and L



$$L + W + L + W = 16$$

$$L = W + 2$$

$$2L + 2W = 16$$

5) When two numbers are added, the result is 182. When they are subtracted the result is 48. Find the numbers.

Let $x =$ first number

Let $y =$ second number

Eqn1: Addition

Eqn2: Subtraction

$$x + y = 182$$

$$x - y = 48$$

6) At a sale, all CD's are one price and all DVD's are another. One person got three CD's and 2 DVD's for \$72. Another got one CD and 3 DVD's cost \$52. Find the sale price for CD's and DVD's.

Let $x =$ price of 1 CD

Let $y =$ price of 1 DVD

Eqn1: Total first person

Eqn2: Total second person

$$3x + 2y = 72$$

$$x + 3y = 52$$