

12-20-17

Aim: SWBAT translate word problems into equations.

HW: Packet Pages 15 and 28

Do Now: Quiz (10 - 12 minutes)

**AIM: SWBAT define a variable, write an equation and solve 2-Step word problems.**

Do Now: Define the variable and write an equation for the situation. DO NOT SOLVE!

- 1) The sum of 8 and 3 times a number is 128. Find the number.
- 2) In a class, there are 12 more girls than boys. If there are 30 students in the class, how many are boys?

To solve a word problem algebraically:

- READ the problem carefully! TWICE! Determine what it is you are being asked to find.
- Define the variable with a let statement.
- Use the variable you defined to write an equation that represents the problem.
- Solve the equation.
- In your head, make sure your answer makes sense in the problem!
- Answer the word problem with a complete sentence.

### Practice Problems.

Define a variable, write an equation and solve each problem.

- 1) Five more than twice a number is 25. Find the number.

let  $n = \text{the \#}$

$$\begin{array}{r} 2n + 5 = 25 \\ -5 \quad -5 \\ \hline 2n = 20 \\ \div 2 \quad \div 2 \\ n = 10 \end{array}$$

The number is 10.

- \* 2) One number is five more than the other. Their sum is 54. What are the numbers?  
(Hint: write 2 let statements)

let  $n = \text{a number}$   
let  $n+5 = \text{the other number}$

$$\begin{array}{r} n + (n+5) = 54 \\ 2n + 5 = 54 \\ -5 \quad -5 \\ \hline 2n = 49 \\ \div 2 \quad \div 2 \\ n = 24.5 \\ n+5 = 29.5 \end{array}$$

The numbers are 24.5 and 29.5.

- 3) Angelica joins a local gym called *Fitness solutions*. If she sets aside \$1000 in her annual budget for gym costs, use the ad at the right to determine how many hours she can spend with a personal trainer.

**Fitness Solutions**

Annual Membership: \$720  
Personal Trainers Available  
(\$35/h)

let  $x = \#$  of hours

$$\begin{array}{r} 720 + 35x = 1000 \\ - 720 \qquad - 720 \\ \hline 35x = 280 \\ \underline{35} \quad \underline{35} \\ x = 8 \end{array}$$

Angelica can afford  
8 hrs of personal training.

- 4) A telephone company advertises long distance service for 7¢ per minute plus a monthly fee of \$3.95. If your bill one month was \$12.63, find the number of minutes you used making long distance calls.

let  $x = \#$  of minutes

\$0.07

$$\begin{array}{r} 3.95 + 0.07x = 12.63 \\ - 3.95 \qquad - 3.95 \\ \hline 0.07x = 8.68 \\ \underline{0.07} \quad \underline{0.07} \\ x = 124 \end{array}$$

I used 124  
minutes of  
long distance.

- \* 5) Mrs. Jackson bought a pair of shoes and a pair of boots for a total of \$150. If the boots were \$50 more than the shoes, how much did each pair cost?

let  $x = \text{cost of shoes}$   
let  $x + 50 = \text{cost of boots}$

$$\begin{array}{r} x + (x + 50) = 150 \\ 2x + 50 = 150 \\ - 50 \quad - 50 \\ \hline 2x = 100 \\ \underline{2} \quad \underline{2} \\ x = 50 \\ x + 50 = 100 \end{array}$$

The shoes cost \$50 and the boots cost \$100.

**Homework "2-Step Equation Word Problems"**

Remember you define a variable by identifying what it is you are looking for in the problem.

For Example: Find the number. Let  $x$  = the number

How much does one shirt cost? Let  $x$  = Cost of one shirt

**Define a variable, write an equation and solve each word problem.**

**Your final answer must be a complete sentence.**

- 1) Four times a number plus 75 is 23.  
Find the number.
- 2) Three times a number plus -8 is -29.  
Find the number.
- 3) Six less than twice a number is -14.  
Find the number.
- 4) Five less than three times a number is 25.  
Find the number.
- 5) Frank bought two shirts for \$38. He paid \$4 more for one than for the other. How much did he pay for each shirt?
- 6) Colleen spent \$105 on two pairs of shoes. One pair cost \$5 more than the other pair. How much did she pay for each pair of shoes?
- 7) A class of 28 students has three times as many boys as girls. How many of the students are girls?
- 8) A coat and pants cost \$78.50. If the cost of the coat was \$31.70 more than the cost of the pants, how much did each item cost?

Homework (continued) - Word Problems using Equations  
with Variables on Both Sides

**Directions:** Define a variable (write a let statement). Then write an equation and solve each word problem. Write your final answer in a complete sentence.

- 1) When two times a number is increased by 10, the result is 1 more than 3 times the number. Find the number.
  
- 2) The greater of two numbers is 7 more than the lesser. Three times the greater number is 5 more than 4 times the lesser number. Find the numbers.
  
- 3) The greater of two numbers is twice the lesser. If the greater is increased by 18, the result is 4 less than 4 times the lesser. Find the numbers.
  
- 4) The greater of two numbers is 1 less than 4 times the lesser. Three times the lesser number is 4 less than the greater. Find the numbers.