

# Algebra I

## 1-7

### Solving Word Problems

Solve. (pg 28)

- 1) An oil painting is 16 years older than a watercolor by the same artist. The oil painting is also three times older than the watercolor. How old is each?

Let  $x =$  age of watercolor 8 yrs  
 $x + 16 =$  age of oil 24 years

Let  $x =$  whatever we know the least information about. In the first sentence, this is the age of the watercolor.

$$x + 16 = 3x$$

The equation is translated directly from the second sentence in the above problem. Note the color coordination.

$$x - x + 16 = 3x - x$$

$$\frac{16}{2} = \frac{2x}{2}$$

$$8 = x$$

$$\{8\}$$

- 3) Two numbers differ by 57. Their sum is 185. Find the numbers.

Let  $x =$  1<sup>st</sup> number 121  
 $x - 57 =$  2<sup>nd</sup> number 64

Let  $x =$  whatever we know the least information about. In this problem, we don't know either of the two numbers, so we choose one.

$$x + (x - 57) = 185$$

$$x + x - 57 = 185$$

$$2x - 57 = 185$$

$$2x - 57 + 57 = 185 + 57$$

$$\frac{2x}{2} = \frac{242}{2}$$

$$x = 121$$

$$\{121\}$$

- 11) The height of the flagpole is three fourths the height of the school. The difference in their heights is 4.5 m. What is the height of the school?

Let  $x =$  height of school 18m  
 $\frac{3}{4}x =$  height of flagpole

$$x - \frac{3}{4}x = 4.5$$

$$4x - 3x = 18$$

$$x = 18$$

$$\{18\}$$

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1-14 all