

**PROBLEM SOLVING STEPS:**

- 1) UNDERSTAND the problem
  - Reread it, choose variables to be the unknowns, construct a drawing
- 2) TRANSLATE the problem into two equations
  - Both in  $y = mx + b$  form to graph or solve by substitution
- 3) SOLVE the system of equations
  - Graphing, substitution, or elimination
- 4) INTERPRET the results
  - Put the answer in terms of the scenario of the word problem
- 5) CHECK the proposed solution in the stated problem
  - Is your answer possible, does it make sense?

**TASK 1: Finding Unknown Numbers**

A first number is 4 less than a second number. Four times the first number is 6 more than twice the second. Find the numbers.

Variables:  $x = 1^{st} \#$        $y = 2^{nd} \#$

Equations:  $x = y - 4$   
 $4x = 2y + 6$

Solve:  $4(y - 4) = 2y + 6$        $x = 11 - 4 = 7$   
 $4y - 16 = 2y + 6$        $\boxed{x = 7}$   
 $2y - 16 = 6$   
 $2y = 22$   
 $\boxed{y = 11}$

Check:

$11 - 4 = 7$        $4(7) = 28 \checkmark$        $2(11) + 6 = 28 \checkmark$

Solution: The 1<sup>st</sup> # is 7 and the 2<sup>nd</sup> # is 11.

TASK 2: Finding Unknown Numbers

A first number is 5 more than a second number. Twice the first number is 2 less than triple the second. Find the numbers.

Variables:  $x = 1st \#$       $y = 2nd \#$

Equations:  $x = y + 5$

$$2x = 3y - 2$$

Solve:

$$\begin{aligned} 2(y+5) &= 3y-2 \\ 2y+10 &= 3y-2 \\ 10 &= y-2 \\ 12 &= y \end{aligned}$$

$$\begin{aligned} x &= 12 + 5 = 17 \\ x &= 17 \end{aligned}$$

Check:

$$\begin{aligned} 12 + 5 &= 17 \checkmark \\ 2(17) &= 34 \checkmark \\ 3(12) - 2 &= 34 \checkmark \end{aligned}$$

Solution:

The 1st # is 17 and the 2nd # is 12.

Notes about what I struggled with so I do not continue to struggle with the same concepts:

- Don't use #'s twice
- Complete sentence answer
- you can check
- cross off as you work.

Still need help with: