

Name: _____
 Date: _____
 Class: _____

Algebra
 Unit 2
 HW 2-4

1) Write an equation that you could use to solve the following problem: The sum of 9 less than a number and 4 more than 6 times the number is equivalent to 17 more than 4 times the number.

$$x \rightarrow \# \quad (x-9) + (6x+4) = 4x+17$$

2) Solve the equation that you created in #1.

$$x-9 + 6x+4 = 4x+17$$

$$\begin{array}{r} 7x-5 = 4x+17 \\ -4x+5 \quad -4x+5 \\ \hline \end{array}$$

$$\frac{3x}{3} = \frac{22}{3}$$

$$\boxed{x = \frac{22}{3}}$$

3) Steve is 24 more than half as old as Joe. Bob is 8 years less than twice as old as Joe. If you add all of their ages together you will get 107. How old is Steve?

$$\text{Joe} \rightarrow x$$

$$\text{Steve} \rightarrow \frac{1}{2}x + 24$$

$$\text{Bob} \rightarrow 2x - 8$$

$$x + \frac{1}{2}x + 24 + 2x - 8 = 107$$

$$3.5x + 16 = 107$$

$$\begin{array}{r} -16 \quad -16 \\ \hline \end{array}$$

$$\frac{3.5x}{3.5} = \frac{91}{3.5}$$

$$\boxed{x = 26}$$

$$\text{Steve} \rightarrow \frac{1}{2}(26) + 24$$

$$\boxed{= 37}$$

4) Jen has 25 more than 3 times as much money as Bill has. If you add the amount they each have together you get 100 more than what Bill has by himself. How much money does Jen have?

$$\text{Bill} \rightarrow x$$

$$\text{Jen} \rightarrow 3x + 25$$

$$x + 3x + 25 = x + 100$$

$$4x + 25 = x + 100$$

$$\begin{array}{r} -x-25 \quad -x-25 \\ \hline \end{array}$$

$$\frac{3x}{3} = \frac{75}{3}$$

$$\boxed{x = 25}$$

5) Carl's cell phone bill was \$78 for the past month. His plan charges him a flat rate of \$50 plus \$.25 for every minute he talks on the phone over 400 minutes. How many total minutes did he talk on the phone for this past month?

$$\begin{array}{l}
 \boxed{x \rightarrow \text{Minutes over 400}} \\
 78 = 50 + .25x \\
 \underline{-50 \quad -50} \\
 28 = .25x \\
 \underline{-.25 \quad .25} \\
 \boxed{112 = x}
 \end{array}
 \qquad
 400 + 112 = \boxed{512 \text{ min}}$$

6) The sum of two consecutive ^{even} integers is 74 less than 3 times the first of these odd integers. What is the larger integer?

$$\begin{array}{l}
 x \rightarrow \text{1st odd int.} \\
 x+2 \rightarrow \text{2nd odd int.} \\
 x + x + 2 = 3x - 74 \\
 2x + 2 = 3x - 74 \\
 76 = x
 \end{array}$$

7) Solve: $10a - (4a + 6) + 8 = 8a + 3(6 - 2a) + 10$

$$10a - 4a - 6 + 8 = 8a + 18 - 6a + 10$$

$$\begin{array}{r}
 6a + 2 = 2a + 28 \\
 \underline{-2a \quad -2 \quad -2a \quad -2} \\
 4a = 26
 \end{array}$$

$$\begin{array}{r}
 4a = 26 \\
 \underline{\quad 4 \quad 4} \\
 \boxed{a = 6.5}
 \end{array}$$