

9/7 Notes: Equations Involving Two or Three Unknown Numbers

- 2) The second of two numbers is 3 less than twice the first. Their sum is 36. Find the numbers.

$$\begin{array}{l} \text{first \#}: f \\ \text{second \#}: 2f - 3 \\ \text{sum is } 36. \checkmark \end{array}$$

$$2(13) - 3$$

$$f + 2f - 3 = 36$$

$$\begin{array}{r} 3f - 3 = 36 \\ +3 \quad +3 \\ \hline \end{array}$$

$$\frac{3f}{3} = \frac{39}{3}$$

$$f = 13$$

$$\begin{array}{l} \text{first \#} = 13 \\ \text{second \#} = 23 \end{array}$$

- 4) The larger of two numbers is 1 less than 8 times the smaller. Their sum is 179. Find the numbers.

$$\begin{aligned} \text{larger \#} &: 8x - 1 \\ \text{smaller \#} &: x \\ \text{sum} &= 179 \end{aligned}$$

$$\begin{aligned} \text{smaller \#} &= 20 \\ \text{larger \#} &= 159 \end{aligned}$$

$$x + 8x - 1 = 179$$

$$9x - 1 = 179$$

$$\begin{array}{r} \times 1 \quad +1 \\ \hline \end{array}$$

$$\frac{9x}{9} = \frac{180}{9}$$

$$x = 20$$

- 10) Together a chair, a table, and a lamp cost \$562. The chair costs 4 times as much as the lamp, and the table costs \$23 less than the chair. Find the cost of the table.

$$\begin{aligned} \text{Chair} &: 4l \\ \text{table} &: 4l - 23 \\ \text{lamp} &: l \\ \text{sum is} & 562 \end{aligned}$$

$$4l + 4l - 23 + l = 562$$

$$9l - 23 = 562$$

$$\begin{array}{r} +23 \quad +23 \\ \hline \end{array}$$

$$\frac{9l}{9} = \frac{585}{9}$$

$$\text{lamp} = 65 \quad l = 65$$

$$\text{Table} = \$237$$

$$\begin{aligned} 4l - 23 \\ 4(65) - 23 \\ 237 \end{aligned}$$

Part 2: 2) Six more than 5 times a number is the same as 9 less than twice the number. Find the number.

the number = n

$$6 + 5n = 2n - 9$$

$$\begin{array}{r} -2n \quad -2n \\ \hline 6 + 3n = -9 \\ -6 \quad -6 \\ \hline 3n = -15 \\ \frac{3n}{3} = \frac{-15}{3} \end{array}$$

$$n = -5$$

8) The sum of two numbers is 35. Three times the larger number is the same as 4 times the smaller number. Find the larger number.

smaller #: $35 - l$

larger #: l

Sum is 35.

$$\begin{array}{r} s + l = 35 \\ -l \quad -l \\ \hline s = 35 - l \end{array}$$

$$3l = 4(35 - l)$$

$$\begin{array}{r} 3l = 140 - 4l \\ +4l \quad +4l \\ \hline 7l = 140 \\ \frac{7l}{7} = \frac{140}{7} \quad l = 20 \end{array}$$

larger # = 20

12) Cycle Paths, Inc. makes bicycles, tricycles, and unicycles. Last week they made 88 more bicycles than unicycles and 5 times as many tricycles as unicycles. If they made 40 more bicycles than tricycles, how many unicycles did they make?

$$bi.: 88 + u$$

$$tri.: 5u$$

$$uni.: u$$

$$40 + tri = bi$$

$$40 + 5u = 88 + u$$