

Triple Word Problems - Notes

① The sum of three numbers is 68.
① $x + y + z = 68$

The 2nd is 5 more than twice the 1st.
② $y = 2x + 5$

The 3rd is 4 times the 1st.
③ $z = 4x$

$$\left. \begin{array}{l} x + y + z = 68 \\ y = 2x + 5 \\ z = 4x \end{array} \right\}$$

Substitution:

$$x + y + z = 68 \Rightarrow x + 2x + 5 + 4x = 68$$

$$y = 2x + 5$$

$$z = 4x$$

$$7x + 5 = 68$$

$$7x = 63$$

$$\boxed{x = 9}$$

Substitute $x = 9$

$$y = 2x + 5$$

$$z = 4x$$

$$y = 2(9) + 5$$

$$z = 4(9)$$

$$\boxed{y = 23}$$

$$\boxed{z = 36}$$

$$\text{Solution: } \boxed{(9, 23, 36)}$$

③ In $\triangle ABC$, the measure of B is 6° less than twice A.

$$A + B + C = 180^\circ$$

$$B = -6 + 2A$$

$$2B$$

The measure of angle C is 2° more than twice B.

$$C = 2 + 2B$$

$$2B$$

$$\left\{ \begin{array}{l} B = 2A - 6 \\ C = 2B + 2 \\ A + B + C = 180^\circ \end{array} \right\}$$

$$\text{Substitute: } A + B + 2B + 2 = 180$$

$$A + 3B = 178$$

$$\text{Rearrange: } B = 2A - 6$$

$$-2A + B = -6$$

Linear System: $A + 2B = 178$ }
 $-2A + B = -6$ }

Elimination: $2(A + 2B = 178) \Rightarrow 2A + 4B = 356$
 $-2A + B = -6$

$$\frac{7B = 350}{7 \quad 7}$$

$$\boxed{B = 50^\circ}$$

Substitute $B = 50$

$$A + 3(50) = 178$$

$$A + 150 = 178$$

$$\boxed{A = 28^\circ}$$

$$A + B + C = 180^\circ$$

$$28 + 50 + C = 180$$

$$78 + C = 180$$

$$\boxed{C = 102^\circ}$$

④ Wed, Thur, and Fri she made \$85

Wed she made \$7 more than Thur

Fri she made \$5 more than Wed.

$$W + T + F = 85$$

$$W = T + 7$$

$$F = W + 5$$

Substitution:

$$W = T + 7$$

$$W + T + F = 85$$

$$\boxed{W - 7} = T$$

$$W + W - 7 + W + 5 = 85$$

$$\boxed{W + 5} = F$$

$$3W - 2 = 85$$

$$3W = 87$$

$$3 \quad 3$$

$$W = 29$$

$$T = W - 7$$

$$= 29 - 7$$

$$T = 22$$

$$F = W + 5$$

$$= 29 + 5$$

$$F = 34$$

Wednesday \$29, Thursday \$22, Friday \$34