

Apple Orchard

let "b" = # of Braeburn

let "c" = # of Cortland

let "f" = # of Fuji

let "r" = # of Rome

ANSWER

KEY

$$\begin{cases} b + c + f + r = 360 \\ b = 2f \\ c = 2r \\ f = 1.5r \end{cases}$$

$$\Rightarrow \begin{matrix} b = 2(1.5r) \\ c = 2r \\ f = 1.5r \end{matrix} \Rightarrow \begin{matrix} b = 3r \\ c = 2r \\ f = 1.5r \end{matrix} \quad \begin{matrix} \text{(substitution} \\ \text{helps you} \\ \text{use only} \\ \text{ONE variable)} \end{matrix}$$

$$\rightarrow b + c + f + r = 360 \Rightarrow 3r + 2r + 1.5r + r = 360$$

$$\Rightarrow \frac{7.5r}{7.5} = \frac{360}{7.5} \Rightarrow \boxed{r = 48}$$

With 1 variable solved, we can solve for the others!

$$b = 3r = 3 \cdot 48 = 144 \text{ Braeburn}$$

$$c = 2r = 2 \cdot 48 = 96 \text{ Cortland}$$

$$f = 1.5r = 1.5 \cdot 48 = 72 \text{ Fuji}$$

$$r = 48 \text{ Rome}$$