

$$\begin{aligned} F_{2x} &= F_2 \cdot \cos \theta \\ &= (80\text{ N}) \times (\cos 75^\circ) \\ &= -20.7\text{ N} \end{aligned}$$

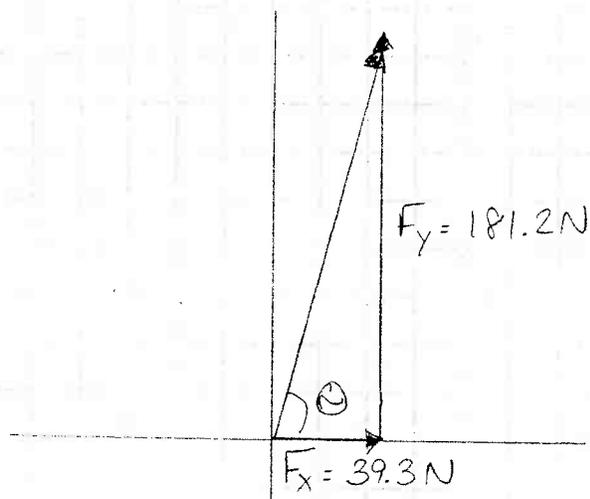
$$\begin{aligned} F_{2y} &= F_2 \cdot \sin \theta \\ &= (80\text{ N}) \times (\sin 75^\circ) \\ &= +77.3\text{ N} \end{aligned}$$

$$\begin{aligned} F_{1x} &= F_1 \cdot \cos \theta \\ &= (120\text{ N}) \times (\cos 60^\circ) \\ &= +60\text{ N} \end{aligned}$$

$$\begin{aligned} F_{1y} &= F_1 \cdot \sin \theta \\ &= (120\text{ N}) \times (\sin 60^\circ) \\ &= +103.9\text{ N} \end{aligned}$$

$$\begin{aligned} F_x &= F_{1x} + F_{2x} \\ &= 60\text{ N} + (-20.7\text{ N}) \\ &= +39.3\text{ N} \end{aligned}$$

$$\begin{aligned} F_y &= F_{1y} + F_{2y} \\ &= 103.9\text{ N} + 77.3\text{ N} \\ &= +181.2\text{ N} \end{aligned}$$



$$\begin{aligned} F &= \sqrt{F_x^2 + F_y^2} \\ &= \sqrt{(39.2\text{ N})^2 + (181.2\text{ N})^2} \end{aligned}$$

$$F = 185\text{ N}$$

$$\begin{aligned} \theta &= \tan^{-1} \left(\frac{F_y}{F_x} \right) \\ &= \tan^{-1} \left(\frac{181.2\text{ N}}{39.3\text{ N}} \right) \end{aligned}$$

$$\theta = 77.8^\circ \text{ above } +x\text{-axis}$$