

U13 TOPIC 3: Angle Relationships with Algebra

AIM: How can we use algebraic equations to solve geometry problems?

Note: $m\angle ABC \rightarrow$ "measure of angle ABC"

IMPORTANT

Example 1: The following figure shows three lines intersecting at a point.

a) Identify the angle relationships in the diagram.

angles at a point & vertical angles

b) Write an equation for the angle relationship shown in the figure and solve for x .

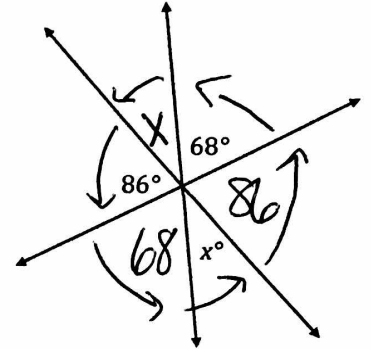
$$86 + 68 + x + 86 + 68 + x = 360$$

$$2x + 308 = 360$$

$$\begin{array}{r} -308 \quad -308 \\ \hline 2x = 52 \end{array}$$

$$\begin{array}{r} 2x = 52 \\ \hline 2 \quad 2 \end{array}$$

$$x = 26^\circ$$



Example 2:

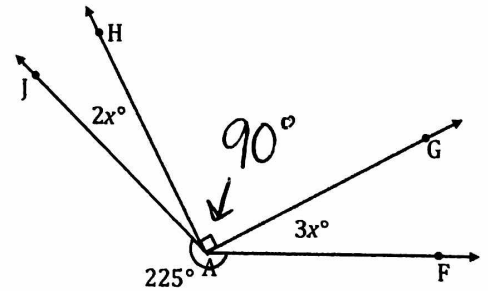
a) Write an equation for the angle relationship shown in the figure and solve for x .

$$2x + 90 + 3x + 225 = 360$$

$$\begin{array}{r} 5x + 315 = 360 \\ -315 \quad -315 \\ \hline 5x = 45 \end{array}$$

$$\begin{array}{r} 5x = 45 \\ \hline 5 \quad 5 \end{array}$$

$$x = 9$$



b) Find the measures of $\angle JAH$ and $\angle GAF$.

$$\begin{array}{l} \angle JAH \rightarrow 2x \\ 2(9) \\ 18^\circ \end{array}$$

$$\begin{array}{l} \angle GAF \rightarrow 3x \\ 3(9) \\ 27^\circ \end{array}$$