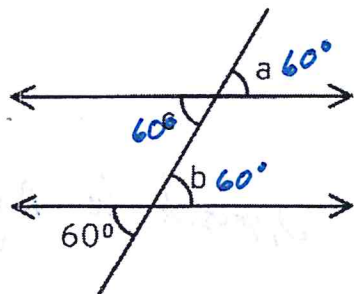


Grade 78 Math **Finding the missing angle Practice with Patterns 1**

Name: Key Class: _____ Date: _____

For each of the diagrams, find the missing angles and name the pattern name to explain how you got it.

(i)

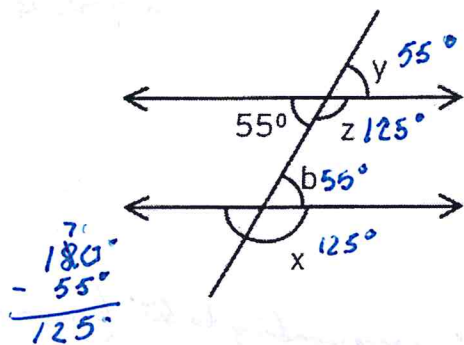


$\angle a = 60^\circ$ because corresponding (congruent)

$\angle b = 60^\circ$ because opposite (congruent)

$\angle c = 60^\circ$ because Exterior Alternating (congruent)

(ii)



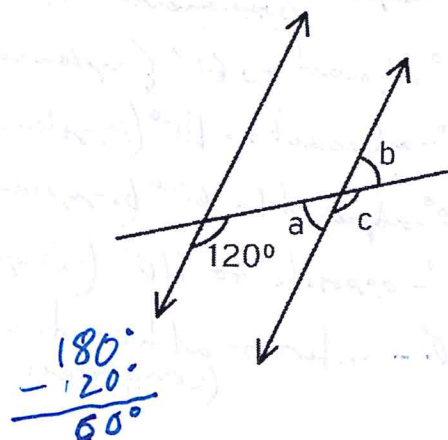
$\angle b = 55^\circ$ Interior alternating (congruent)

$\angle x = 125^\circ$ Adjacent to Interior alternating $\angle b$ (supplementary)

$\angle y = 55^\circ$ opposite (congruent)

$\angle z = 125^\circ$ Adjacent (supplementary)

(iii)



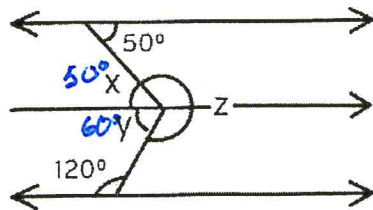
$\angle a = 60^\circ$ Interior same side (supplementary)

$\angle b = 60^\circ$ opposite to Interior same side $\angle a$ (supplementary)

$\angle c = 120^\circ$ corresponding (congruent)

(iv)

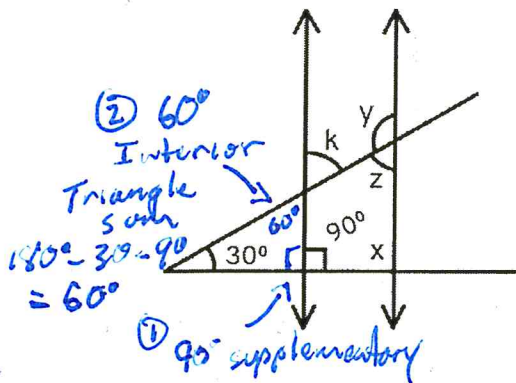
$$\begin{array}{r} 180^\circ \\ - 120^\circ \\ \hline 60^\circ \end{array}$$



$$\begin{aligned} z &= 360^\circ - (x + y) \\ &= 360^\circ - 110^\circ \\ &= 250^\circ \end{aligned}$$

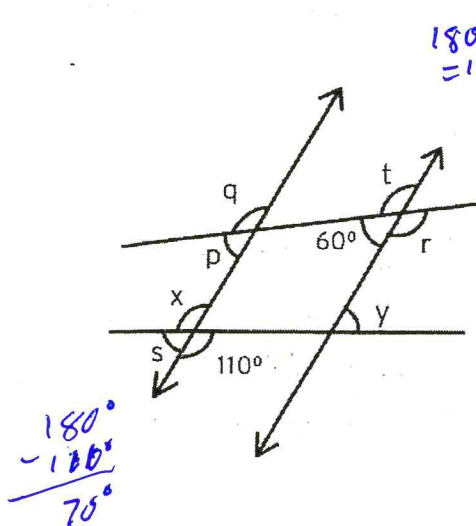
$\angle x = 50^\circ$ Interior Alternating (congruent)
 $\angle y = 60^\circ$ Interior Same side (supplementary)
 $\angle z = 250^\circ$ Circle sum

(v)



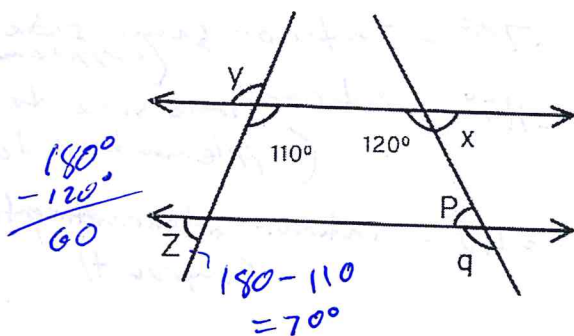
$\angle k = 60^\circ$ opposite to Angle 60° (congruent)
 $\angle x = 90^\circ$ Interior Same side (supplementary)
 $\angle y = 120^\circ$ interior same side to $\angle k$ (supplementary to $\angle k$)
 $\angle z = 60^\circ$ interior alternating to $\angle k$ congruent

(vi)



$\angle p = 60^\circ$ - corresponding to 60° (congruent)
 $\angle q = 120^\circ$ - adjacent to $\angle p$ - corresponding to 60° (supplementary to 60°)
 $\angle r = 120^\circ$ - adjacent to 60° (supplementary to 60°)
 $\angle s = 70^\circ$ - adjacent to 110° (supplementary)
 $\angle t = 120^\circ$ - adjacent to 60° (supplementary)
 $\angle x = 110^\circ$ - opposite to 110° (congruent)
 $\angle y = 60^\circ$ - interior alternating to 60° (congruent)

(vii)



$\angle p$ 60° - interior same side (supplementary to 120°)

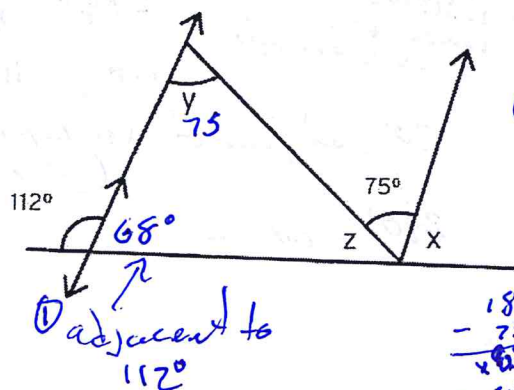
$\angle q$ 120° - corresponding to 120° (congruent)

$\angle x$ 60° - adjacent to 120° (supplementary)

$\angle y$ 110° - opposite to 110° congruent.

$\angle z$ 70° Exterior same side to $\angle y$ (supplementary)

(viii)



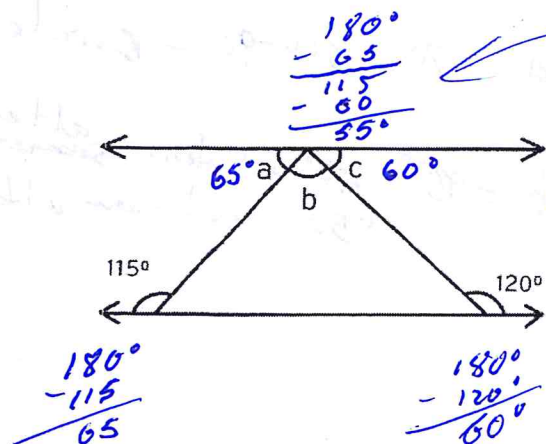
$\angle x = 68^\circ$ corresponding to 68° (congruent)
 $\textcircled{2}$ $\angle y = 75^\circ$ due to alternate internal (congruent)

$\angle z = 37^\circ$ interior angle sum. ($= 180^\circ$)

or supplementary to $(75^\circ + x)$

$$\begin{array}{r} 180 \\ - 75 \\ \hline 105 \\ - 68 \\ \hline 37^\circ \end{array}$$

(ix)



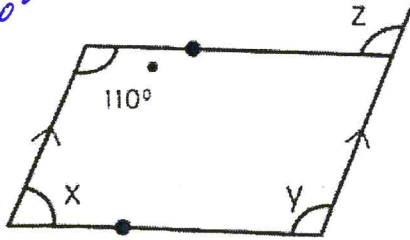
$\textcircled{1}$ $\angle a$ 65° - interior same side (supplementary to 115°)

$\textcircled{2}$ $\angle b$ 55° - supplementary to $(60^\circ \text{ and } 65^\circ)$

$\textcircled{3}$ $\angle c$ 60° - interior same side (supplementary to 120°)

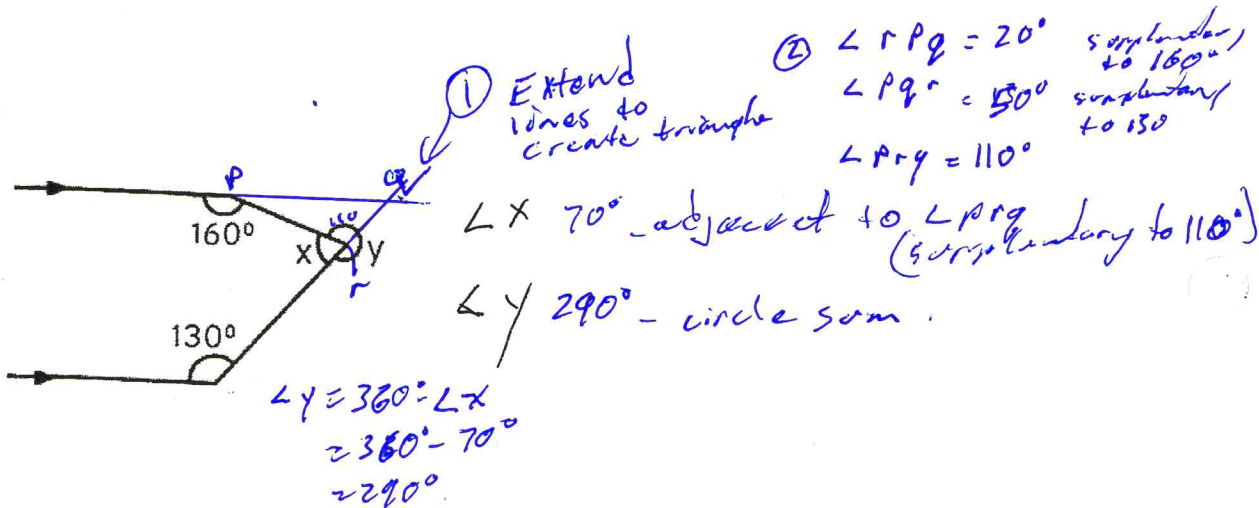
(x)

$$\begin{array}{r} 180 \\ - 110 \\ \hline 70^\circ \end{array}$$



$\angle X = 70^\circ$ - Interior same side (supplementary)
 $\angle Y = 110^\circ$ - interior same side to $\angle X$ (supplementary to $\angle X$)
 $\angle Z = 110^\circ$ - interior alternating to 110° (congruent)

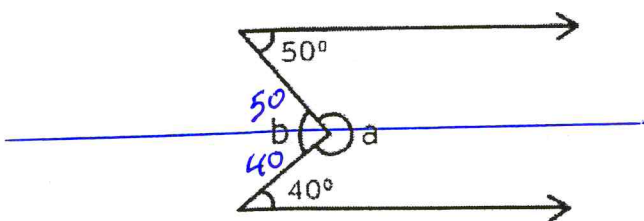
(xi)



① Extend lines to create triangles
 ② $\angle RPQ = 20^\circ$ supplementary to 160°
 $\angle PQR = 50^\circ$ supplementary to 130°
 $\angle PRQ = 110^\circ$
 $\angle X = 70^\circ$ - adjacent to $\angle PRQ$ (supplementary to 110°)
 $\angle Y = 290^\circ$ - circle sum

$$\begin{aligned} \angle Y &= 360^\circ - \angle X \\ &= 360^\circ - 70^\circ \\ &= 290^\circ \end{aligned}$$

(xii)



② $\angle a = 270^\circ$ $360 - 90$ - circle sum
 $\angle b = 90^\circ$ 40° - interior alternating to 40°
 $+ 50^\circ$ - interior alternating to 50°