

Angeles City Science High School

Mathematics 9

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Section: 9 -

Activity A:

$$1. b^2 = a^2 + c^2 - 2ac(\cos B)$$

$$\sqrt{b^2} = \sqrt{(25)^2 + (36)^2 - 2(25)(36)(\cos 62^\circ)}$$

$$b = 32.80 \text{ units}$$

$$\rightarrow \frac{32.80}{\sin 62^\circ} = \frac{25}{\sin A}$$

$$\rightarrow 32.80 \sin A = 25 \sin 62^\circ$$

$$A = \sin^{-1} \left(\frac{25 \sin 62^\circ}{32.80} \right)$$

$$A = 42.30^\circ$$

$$C = 180 - (42.30 + 62)$$

$$C = 75.70^\circ$$

$$2. a^2 = b^2 + c^2 - 2bc(\cos A)$$

$$\sqrt{a^2} = \sqrt{(14)^2 + (18.5)^2 - 2(14)(18.5)(\cos 49)}$$

$$\boxed{a = 14.09 \text{ units}}$$

$$\rightarrow \frac{14.09}{\sin 49} = \frac{14}{\sin B}$$

$$\rightarrow 14.09 \sin B = 14 \sin 49$$

$$\rightarrow B = \sin^{-1} \left(\frac{14 \sin 49}{14.09} \right)$$

$$\boxed{B = 48.58^\circ}$$

$$C = 180 - (48.58 + 49)$$

$$\boxed{C = 82.42^\circ}$$

$$3. \cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos A = \frac{(9)^2 + (4.5)^2 - (12)^2}{2(9)(4.5)}$$

$$A = \cos^{-1} \left(\frac{(9)^2 + (4.5)^2 - (12)^2}{2(9)(4.5)} \right)$$

$$\boxed{A = 121.86^\circ}$$

$$C = 180 - (121.86 + 39.57)$$

$$\boxed{C = 18.57^\circ}$$

$$\rightarrow \frac{12}{\sin 121.86^\circ} = \frac{9}{\sin B}$$

$$\rightarrow 12 \sin B = 9 \sin 121.86^\circ$$

$$\rightarrow B = \sin^{-1} \left(\frac{9 \sin 121.86^\circ}{12} \right)$$

$$\boxed{B = 39.57^\circ}$$

$$4 \cdot \cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos A = \frac{(4)^2 + (7)^2 - (6.3)^2}{2(4)(7)}$$

$$\cos A = \cos^{-1} \left(\frac{(4)^2 + (7)^2 - (6.3)^2}{2(4)(7)} \right)$$

$$\boxed{A = 63.13^\circ}$$

$$\rightarrow \frac{6.3}{\sin 63.13^\circ} = \frac{4}{\sin B}$$

$$\rightarrow 6.3 \sin B = 4 \sin 63.13$$

$$\rightarrow \sin B = \frac{4 \sin 63.13}{6.3}$$

$$\rightarrow B = \sin^{-1} \left(\frac{4 \sin 63.13}{6.3} \right)$$

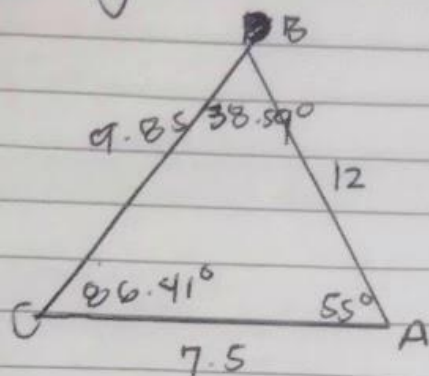
$$\rightarrow \boxed{B = 34.50^\circ}$$

$$C = 180 - (63.13^\circ + 34.50^\circ)$$

$$\boxed{C = 82.37^\circ}$$

Activity B

1.



$$a^2 = b^2 + c^2 - 2bc(\cos A)$$

$$a^2 = (7.5)^2 + (12)^2 - 2(7.5)(12)(\cos 55^\circ)$$

$$a = 9.85 \text{ units}$$

$$\rightarrow \frac{9.85}{\sin 55^\circ} = \frac{7.5}{\sin B}$$

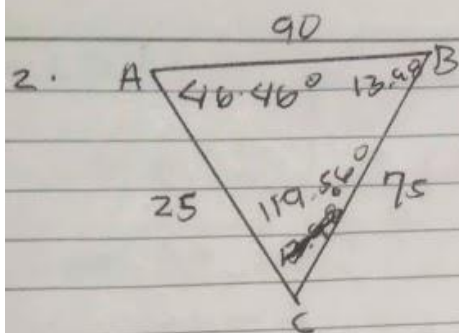
$$\rightarrow \frac{9.85 \sin B}{9.85} = \frac{7.5 \sin 55^\circ}{9.85}$$

$$\rightarrow B = \sin^{-1} \left(\frac{7.5 \sin 55^\circ}{9.85} \right)$$

$$B = 38.59^\circ$$

$$C = 180 - (55 + 38.59)$$

$$C = 86.41^\circ$$



$$\cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

$$\cos A = \frac{(25)^2 + (90)^2 - (75)^2}{2(25)(90)}$$

$$A = \cos^{-1} \left(\frac{(25)^2 + (90)^2 - (75)^2}{2(25)(90)} \right)$$

$$\boxed{A = 46.46^\circ}$$

$$\rightarrow \frac{75}{\sin 46.46} = \frac{25}{\sin B}$$

$$\rightarrow 75 \sin B = \frac{25 \sin 46.46}{75}$$

$$\rightarrow B = \sin^{-1} \left(\frac{25 \sin 46.46}{75} \right)$$

$$\boxed{B = 13.98^\circ}$$

$$C = 180^\circ - (46.46 + 13.98)$$

$$\boxed{C = 119.56^\circ}$$

