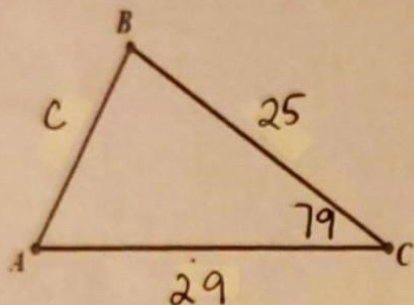


The Law of Cosines Practice

Angles - Whole
Sides - 1 dec. pl.

Use the Law of Cosines to solve each triangle. Label the triangle and show all work! Round your answers to the nearest tenth.

1. $\triangle ABC$



$$m\angle A = 45^\circ \quad a = 25$$

$$m\angle B = 56^\circ \quad b = 29$$

$$m\angle C = 79^\circ \quad c = 34.5$$

$$\textcircled{1} c = \sqrt{29^2 + 25^2 - 2(29)(25)\cos 79}$$

$$c = 34.5$$

$$\textcircled{2} \frac{\sin 79}{34.5} = \frac{\sin B}{29} = \frac{\sin A}{25}$$

$$B = \sin^{-1}\left(\frac{29 \sin 79}{34.5}\right)$$

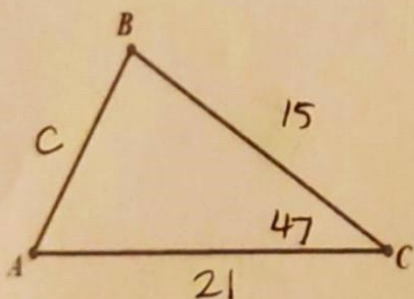
$$B = 56^\circ$$

$\textcircled{3}$

$$\angle A = 180 - (79 + 56^\circ)$$

$$\angle A = 45^\circ$$

2. $\triangle ABC$



$$m\angle A = 47^\circ \quad a = 15$$

$$m\angle B = 86^\circ \quad b = 21$$

$$m\angle C = 47^\circ \quad c = 15.4$$

$$\textcircled{1} c = \sqrt{15^2 + 21^2 - 2(15)(21)\cos 47}$$

$$c = 15.4$$

$$\textcircled{2} \frac{\sin 47}{15.4} = \frac{\sin B}{21} = \frac{\sin A}{15}$$

$$B = \sin^{-1}\left(\frac{21 \sin 47}{15.4}\right)$$

$$\boxed{B = 86^\circ}$$

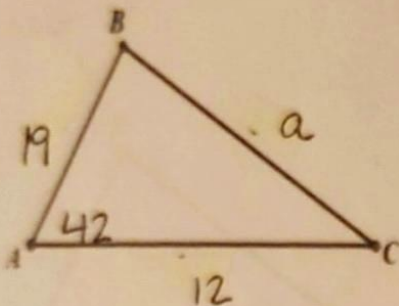
$$\textcircled{3} \angle A = 180 - (47 + 86)$$

$$\boxed{\angle A = 47^\circ}$$

The Law of Cosines Practice

3. $\triangle ABC$

(3th)



$m\angle A = 42^\circ$ $a = 12.9$

$m\angle B = 58^\circ$ $b = 12$

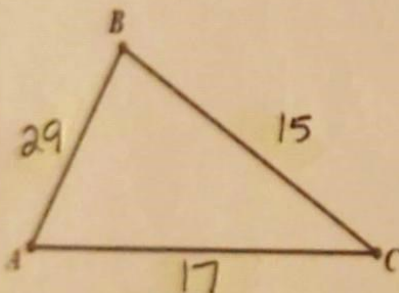
$m\angle C = 80^\circ$ $c = 19$

① $a = \sqrt{12^2 + 19^2 - 2(12)(19)\cos 42}$
 $a = 12.9$

② $\frac{\sin 42}{12.9} = \frac{\sin B}{12} = \frac{\sin C}{19} \rightarrow C = \sin^{-1}\left(\frac{19\sin 42}{12.9}\right)$
 $C = 80$

③ $\angle B = 180 - (42 + 80) = 58^\circ$

7. $\triangle ABC$



$m\angle A = 23^\circ$ $a = 15$

$m\angle B = 27^\circ$ $b = 17$

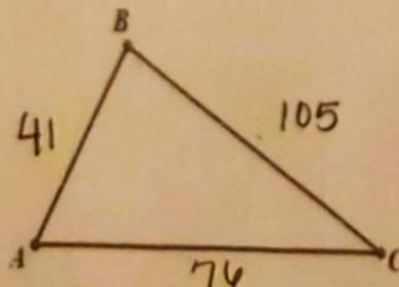
$m\angle C = 130^\circ$ $c = 29$

① $C = \cos^{-1}\left(\frac{17^2 + 15^2 - 29^2}{2(17)(15)}\right)$
 $C = 130^\circ$

② $\frac{\sin 130}{29} = \frac{\sin B}{17} = \frac{\sin A}{15}$ ③ $\angle A = 180 - (130 + 27)$
 $\angle A = 23^\circ$

$B = \sin^{-1}\left(\frac{17\sin 130}{29}\right) = 27^\circ \leftarrow$

8. $\triangle ABC$



$m\angle A = 125^\circ$ $a = 105$

$m\angle B = 36^\circ$ $b = 76$

$m\angle C = 19^\circ$ $c = 41$

① $A = \cos^{-1}\left(\frac{76^2 + 41^2 - 105^2}{2(76)(41)}\right)$
 $A = 125^\circ$

③ $\angle C = 180 - (36 + 125)$
 $\angle C = 19$

② $\frac{\sin 125}{105} = \frac{\sin B}{76} = \frac{\sin A}{41}$
 $B = \sin^{-1}\left(\frac{76\sin 125}{105}\right) = 36^\circ \leftarrow$