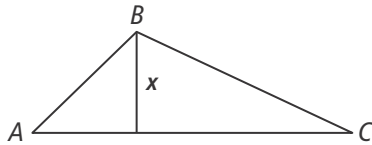## 8-2 Additional Practice

Law of Sines and Law of Cosines

1. How can you derive the Law of Sines for angles $A$ and $C$?



2. In $\triangle MNO$, $m\angle M = 135°$, $m = 18$, and $n = 14$. Find $m\angle O$. Round your answer to the nearest tenth.

3. In $\triangle ABC$, $m\angle A = 60°$, $a = 8$, and $b = 6$. Find $m\angle B$. Round your answer to the nearest tenth.

4. Describe and correct the error a student made in using the Law of Cosines to solve for $b$ in $\triangle ABC$ where $m\angle B = 120°$, $a = 16$, and $c = 14$.

$b^2 = 16^2 + 14^2 - (16)(14)(\cos 120°)$       $b^2 = 16^2 + 14^2 - \underline{\quad} (16)(14)(\cos 120°)$
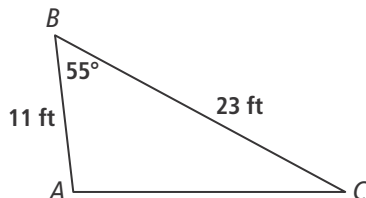
$b^2 = 256 + 196 - (224)(-0.5)$       $b^2 = 256 + 196 - (\underline{\quad})(-0.5)$

$b^2 = 256 + 196 + 112 = 564$       $b^2 = 256 + 196 + \underline{\quad} = 676$

$b \approx 23.7$       $b = \underline{\quad}$

5. The triangle illustrates the side view of a roof truss with edge-lengths of 11 ft and 23 ft. The angle between the edges is 55°. What is the length of $AC$ to the nearest foot?
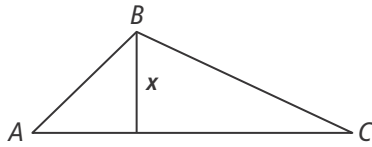


6. Dyani throws a ball to Edgar, who is 8 m away. When Edgar catches the ball, he turns 55°, and then throws the ball 9 m to Hana. What angle does Hana turn to throw the ball to Dyani? Round to the nearest tenth.

# 8-2 Additional Practice

Law of Sines and Law of Cosines

**1.** How can you derive the Law of Sines for angles $A$ and $C$?



$\sin A = \frac{x}{c}$ or $x = c \sin A$ and $\sin C = \frac{x}{a}$ or $x = a \sin C$

$c \sin A = a \sin C \Rightarrow \frac{\sin A}{a} = \frac{\sin C}{c}$

**2.** In $\triangle MNO$, $m\angle M = 135°$, $m = 18$, and $n = 14$. Find $m\angle O$. Round your answer to the nearest tenth.

**11.6°**

**3.** In $\triangle ABC$, $m\angle A = 60°$, $a = 8$, and $b = 6$. Find $m\angle B$. Round your answer to the nearest tenth.

**40.5°**

**4.** Describe and correct the error a student made in using the Law of Cosines to solve for $b$ in $\triangle ABC$ where $m\angle B = 120°$, $a = 16$, and $c = 14$.

**The student did not multiply $ac \cos B$ by 2.**

$b^2 = 16^2 + 14^2 - (16)(14)(\cos 120°)$          $b^2 = 16^2 + 14^2 - \underline{\textbf{2}}\ (16)(14)(\cos 120°)$
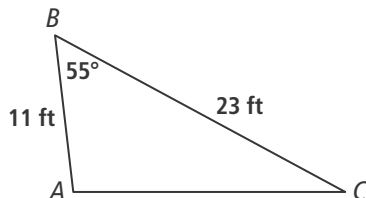
$b^2 = 256 + 196 - (224)(-0.5)$          $b^2 = 256 + 196 - (\underline{\textbf{448}})(-0.5)$

$b^2 = 256 + 196 + 112 = 564$          $b^2 = 256 + 196 + \underline{\textbf{224}} = 676$

$b \approx 23.7$          $b = \underline{\textbf{26}}$

**5.** The triangle illustrates the side view of a roof truss with edge-lengths of 11 ft and 23 ft. The angle between the edges is 55°. What is the length of $AC$ to the nearest foot? **19 ft**



**6.** Dyani throws a ball to Edgar, who is 8 m away. When Edgar catches the ball, he turns 55°, and then throws the ball 9 m to Hana. What angle does Hana turn to throw the ball to Dyani? Round to the nearest tenth.

**56.1°**