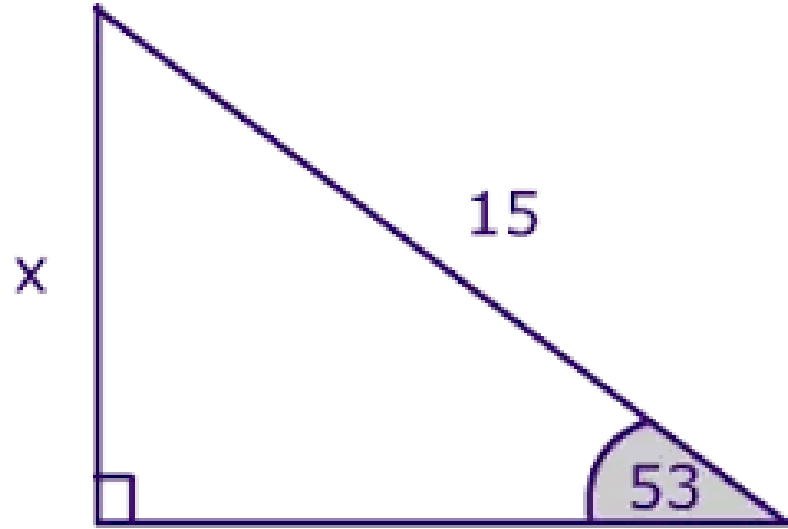


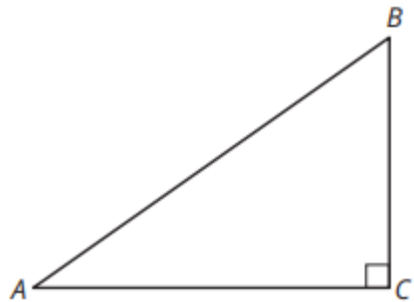
Use a sine ratio to find the value of x :



The **inverse sine** (or arcsine) of x is defined as the measure of an acute angle whose sine is x . If you know the length of any two sides of a right triangle, it is possible to calculate the measure of either acute angle by using the inverse sine, or \sin^{-1} button on a graphing calculator.

In right triangle ABC , if $\sin A = x$, then $\sin^{-1} x = m\angle A$.

- In $\triangle ABC$, $\sin A = \frac{2}{5}$. Use the inverse sine to determine $m\angle A$.**



2. Eli calculated the inverse sine of $\angle A$. Explain what Eli did incorrectly when calculating the inverse sine.

Eli



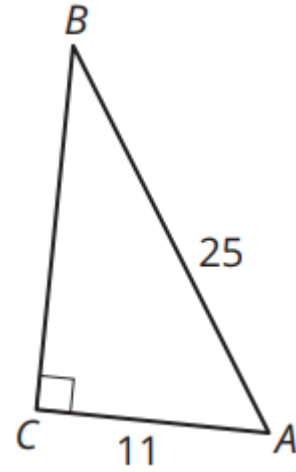
$$\sin A = \frac{2}{5}$$

I can use the sin button on my calculator to determine $\sin\left(\frac{2}{5}\right) \approx 0.007$.

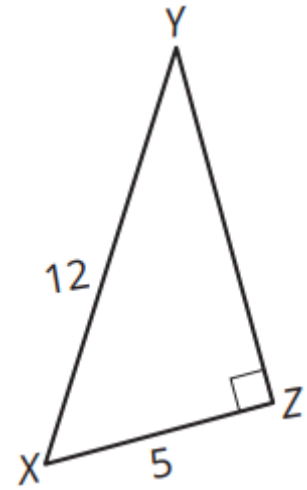
I can then take the inverse of 0.007 to determine $m\angle A$.

$$m\angle A \approx 143^\circ$$

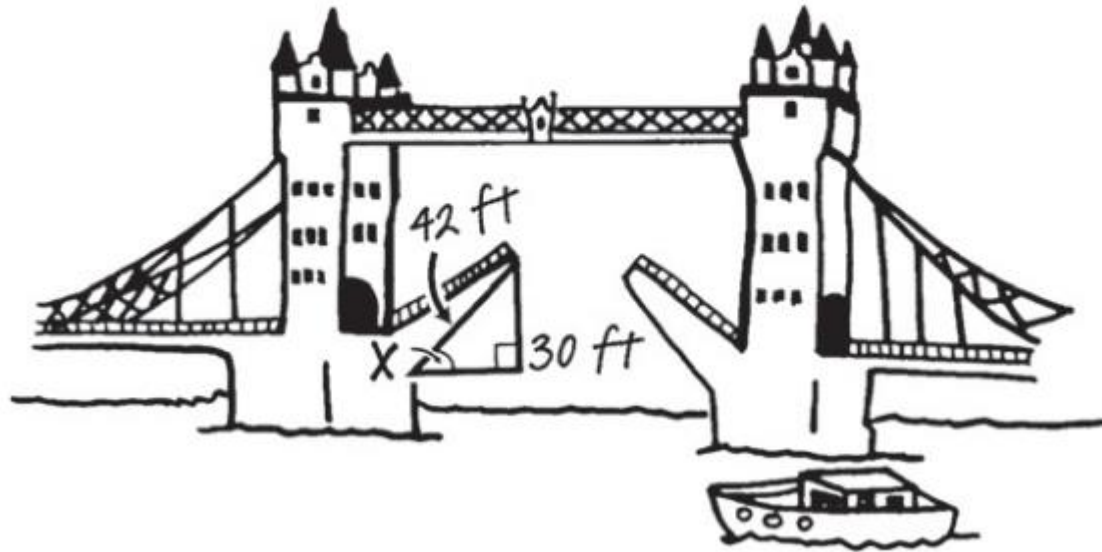
3. Determine the ratio for $\sin B$, and then use the inverse sine to calculate $m\angle B$.



4. Calculate $m\angle Y$.



The length of one leaf, or deck, is 42 feet. The maximum height of an open leaf is 30 feet. Calculate the measure of the angle formed by the movement of the bridge.



6. The Leaning Tower of Pisa is a tourist attraction in Italy. It was built on unstable land, and as a result, it really does lean!

M2-162

The height of the tower is approximately 55.86 meters from the ground on the low side and 56.7 meters from the ground on the high side. The top of the tower is displaced horizontally 3.9 meters as shown. Determine the angle at which the tower leans.

