Precalculus with Trigonometry
Lesson: April 6th

Learning Target:
Students will use the Law of Sines to solve for missing angle measurements or missing side lengths of a non-right triangle.

Let's Get Started:
Watch Video - Trigonometry Law of Sines/Sine Rule

Law of Sines

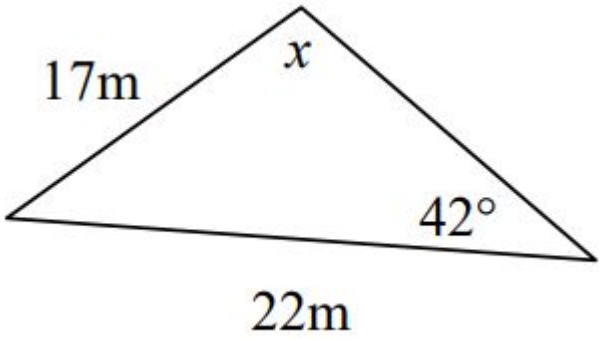
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

or

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

Example #1:

Step 1: Determine whether you are solving for an angle or a side.



Step 2: Set up your proportion so that the missing measurement is on top. In this case…

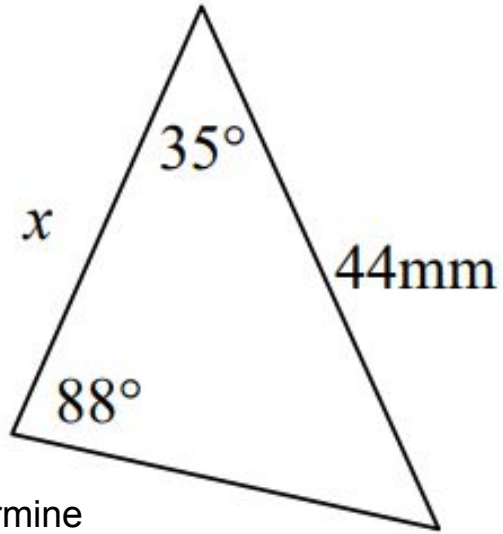
$$\frac{\sin\theta^\circ}{22} = \frac{\sin 42^\circ}{17}$$

Step 3: Use inverse operations to solve for the missing measurement. In this case...

$$\sin\theta^\circ = 22\frac{\sin 42^\circ}{17} \quad \rightarrow \quad \theta^\circ = \sin^{-1}\left(22\frac{\sin 42^\circ}{17}\right) = 59.989^\circ$$

Example #2:

Step 1: Determine whether you are solving for an angle or a side.



Step 2: Set up your proportion so that the missing measurement is on top. In this case…

$$\frac{x}{\sin 57°} = \frac{44}{\sin 88°}$$

Note that I had to determine the angle across from x.

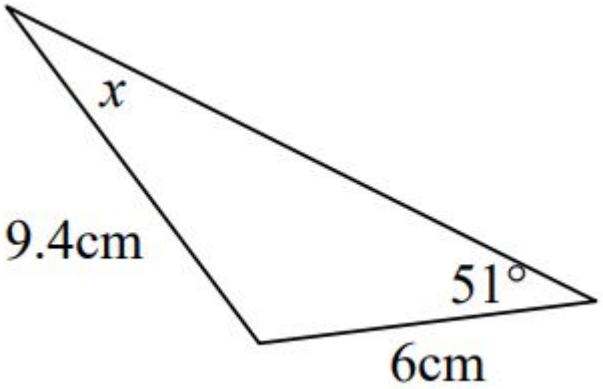
Step 3: Use inverse operations to solve for the missing measurement. In this case...

$$x = \sin 57° \cdot \frac{44}{\sin 88°} = 36.924\ mm$$

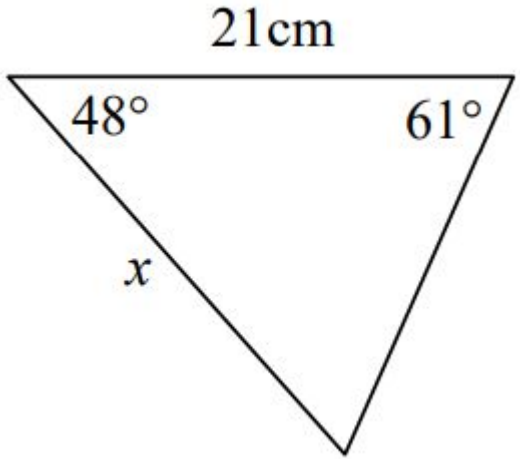
Law of Sines Practice:

On a sheet of paper, solve each of the following for x. Then check your answers on the next page.

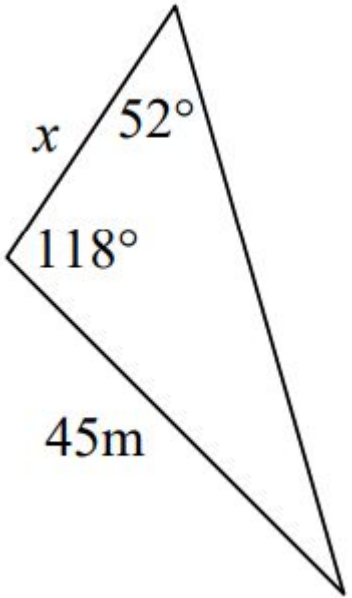
1.



2.



3.



Law of Sines Answer Key:

1. 29.739°

2. 19.425 cm

3. 9.916 m

Additional Practice:

Click on the link below to get additional practice and to check your understanding.

Additional Practice & Answer Key

Law of Sines Practice (Kuta Software)