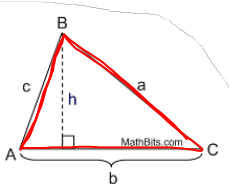
Step 1: Start with ΔABC which is not a right triangle. An altitude has been drawn from vertex B.



Express: $\sin \angle A = \frac{h}{c}$ $\Rightarrow h = c \cdot \sin A$

Express: $\sin \angle C = \frac{h}{a}$ $\Rightarrow h = a \cdot \sin C$

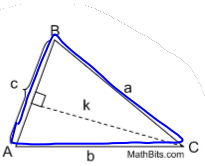
Step 2: Using the Transitive Property, it can be stated that:

$c \cdot \sin A = a \cdot \sin C$

$\frac{}{c} \quad \frac{}{a} \qquad \frac{}{a} \quad \frac{}{c}$

Step 3: Rewrite Step 2 to form a proportion (a statement when cross-multiplied will create Step 2):

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



Step 4: Now, re-position the altitude and repeat this process:

Express: $\sin \angle A = \frac{k}{b}$ $\Rightarrow k = b \cdot \sin A$

Express: $\sin \angle B = \frac{k}{a}$ $\Rightarrow k = a \cdot \sin B$

Step 5: Using the Transitive Property, it can be stated that: $b \cdot \sin A = a \cdot \sin B$

$\frac{}{b} \quad \frac{}{a} \qquad \frac{}{a} \quad \frac{}{b}$

Step 6: Rewrite Step 5 to form a proportion (a statement when cross-multiplied will create Step 5):

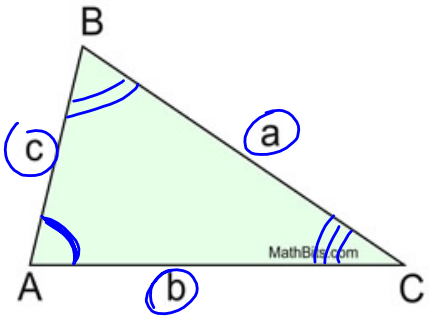
$$\frac{\sin A}{a} = \frac{\sin B}{b}$$

Step 7: Use the transitive property to combine your results to form the Law of Sines:

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

Jan 25-9:54 AM

An oblique triangle is any triangle that is not a right triangle.



Law of Sines

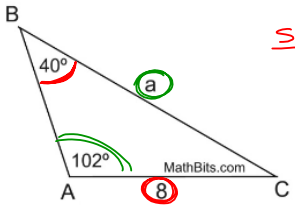
$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

NOTICE:
Law of Sines
uses at least 2∠s and
2 respective sides.

Apr 18-12:43 PM

Round to the nearest integer.

1. Find **a**.

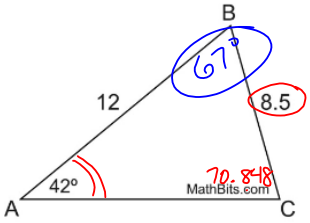


$\frac{\sin 102}{a} = \frac{\sin 40}{8}$

$\frac{8(\sin 102)}{(\sin 40)} = \frac{a(\sin 40)}{(\sin 40)}$

$a = 12$

2. Find $m\angle B$



$\frac{\sin 42}{8.5} = \frac{\sin C}{12}$

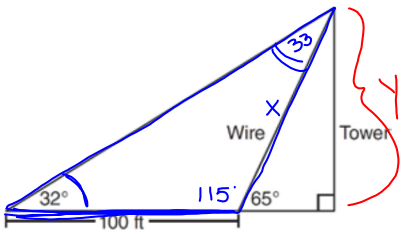
$\sin^{-1}\left(\frac{12(\sin 42)}{8.5}\right)$

$\frac{12(\sin 42)}{8.5} = \frac{8.5(\sin C)}{8.5}$

$\frac{12(\sin 42)}{8.5} = \sin C$

Apr 18-12:56 PM

4. The diagram below shows the plans for a cell phone tower. A guy wire attached to the top of the tower makes an angle of 65 degrees with the ground. From a point on the ground 100 feet from the end of the guy wire, the angle of elevation to the top of the tower is 32 degrees. Find the height of the tower, to the nearest foot.



$\frac{\sin 32}{x} = \frac{\sin 33}{100}$

$\frac{x(\sin 33)}{\sin 33} = \frac{100(\sin 32)}{\sin 33}$

$x = 97.29733$

$\sin 65 = \frac{y}{97.297...}$

$y = 97.297...(\sin 65)$

$y = 88$ ft

Apr 19-12:54 PM