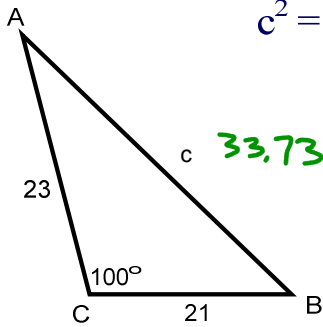


Law of Cosines

127

Law of Cosines: $a^2 = b^2 + c^2 - 2bc \cos A$
 $b^2 = a^2 + c^2 - 2ac \cos B$
 $c^2 = a^2 + b^2 - 2ab \cos C$

Choose the version based on what you're solving for.



$$c^2 = 21^2 + 23^2 - 2(21)(23) \cos 100$$

$$c^2 = 441 + 529 - 966 \cos 100$$

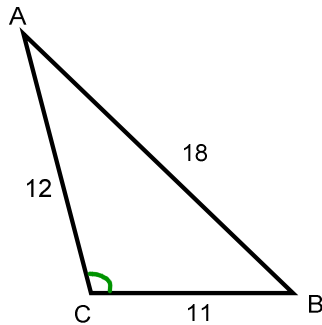
$$c^2 = 970 - 966 \cos 100$$

No! No! NO!

$$c^2 = 970 - (-167.74)$$

$$c^2 = 970 + 167.74$$

$$c^2 = 1137.74 \quad c = 33.73$$



across from the longest side.

Law of Cosines: $c^2 = a^2 + b^2 - 2ab \cos C$

Always find the biggest angle first!

$$18^2 = 11^2 + 12^2 - 2(11)(12) \cos C$$

$$324 = 121 + 144 - 264 \cos C$$

$$324 = 265 - 264 \cos C$$

$$\frac{59}{-264} = \frac{-264 \cos C}{-264}$$

$$-.223 = \cos C$$

$$C = 102.9^\circ$$