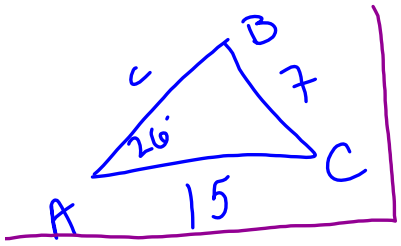
Solve the triangle given: a=7, b=15, and A= 26°



$$\frac{7}{\sin 26} = \frac{15}{\sin B} = \frac{c}{\sin C}$$

$$\frac{15 \sin 26}{7} = \frac{\cancel{7} \sin B}{\cancel{7}}$$

$$\sin^{-1}\left(\frac{15 \sin 26}{7}\right) = B = 69.95°$$

$\angle A = 26°$ $a = 7$
$\angle B = 69.95°$ $b = 15$
$\angle C = 84.05°$ $c = 15.85$

$$\frac{7}{\sin 26} = \frac{15}{\sin 69.95} = \frac{c}{\sin 84.05}$$

$$\frac{7 \sin 84.05}{\sin 26} = \frac{c \cancel{\sin 26}}{\cancel{\sin 26}}$$

$\angle A_2 = 26°$ $a_2 = 7$
$\angle B_2 = 110.05°$ $b_2 = 15$
$\angle C_2 = 43.95°$ $c_2 = 11.05$

$$\frac{7}{\sin 26} = \frac{15}{\sin 110.05} = \frac{c_2}{\sin 43.95}$$

$$\frac{15 \sin 43.95}{\sin 110.05} = \frac{c \cdot \cancel{\sin 110.05}}{\cancel{\sin 110.05}}$$

Solve the triangle given: c=24, b=17, and B= 16°

$\angle A = 141.1°$ $a = 38.72$
$\angle B = 16°$ $b = 17$
$\angle C = 22.90$ $c = 24$

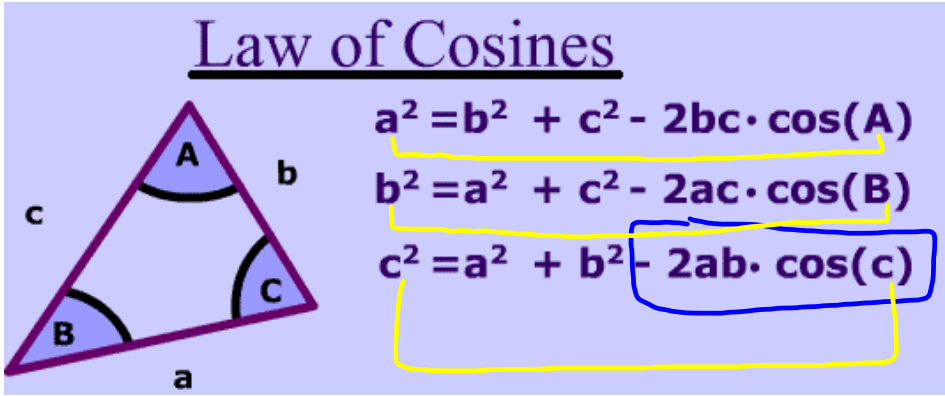
$\angle A_2 = 6.9°$ $a_2 = 7.41$
$\angle B_2 = 16°$ $b_2 = 17$
$\angle C_2 = 157.1°$ $c_2 = 24$

$A = 45^{o}$ b = 60 c = 46

Unit 4

Learning Target 3

I can use the Law of Cosines
to solve a triangle.

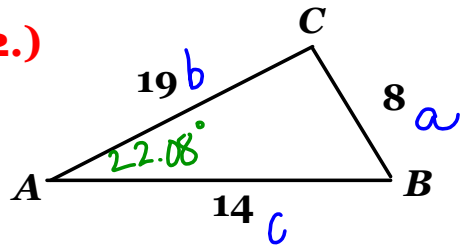


When to use LAW OF COSINES...

SSS - Three sides **(ALWAYS find the smallest angle first)**

SAS - Two sides and an included angle

2.)



$$\frac{8}{\sin 22.08} = \frac{19}{\sin B}$$

$$8 \sin B = 19 \sin 22.08$$

$$\sin B = \sin^{-1}\left(\frac{19 \sin 22.08}{8}\right)$$

$$8^2 = 19^2 + 14^2 - 2(19)(14)\cos A$$

$$64 = 361 + 196 - 2(19)(14)\cos A$$

$$64 = 361 + 196 - 532\cos A$$

$$64 = 557 - 532\cos A$$

$$-557 \quad -557$$

$$\frac{-493}{-532} = \frac{-532\cos A}{-532}$$

$$\cos^{-1}\left(\frac{493}{532}\right) = \cos^{-1}\cos A$$

$$\boxed{63.22° = \angle B}$$

$$\boxed{22.08° = \angle A}$$

$$\boxed{94.7° = \angle C}$$