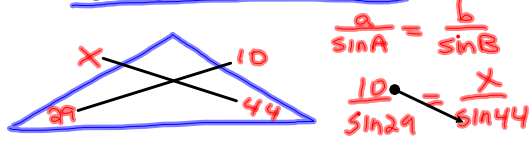


Ambiguous Triangles

Outcome 3

Ambiguous - can "go" one way or the other

Last Year - Law of Sines



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

$$\frac{10}{\sin 29} = \frac{X}{\sin 44}$$

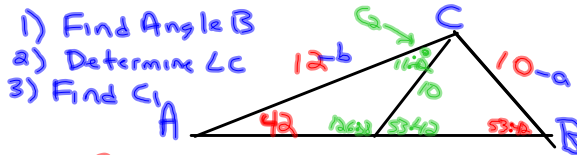
$$X = \frac{10 \times \sin 44}{\sin 29}$$

$$X = 14.33$$

A triangle has angle $A = 42^\circ$

side a is 10. side $b = 12$. Find

both possible values of side c



- 1) Find Angle B
- 2) Determine $\angle C$
- 3) Find c_1

Find $\angle B$ first

$$\angle C = 180 - \angle B - \angle A$$

$$\angle C = 84.58$$

$$\frac{10}{\sin 42} = \frac{c_1}{\sin 84.58}$$

$$c_1 = 14.9$$

$$\frac{10}{\sin 42} = \frac{12}{\sin B}$$

$$\sin B = \frac{12 \times \sin 42}{10}$$

$$\sin B = .803$$

$$B = \sin^{-1}(.803)$$

$$\angle B = 53.42$$

Find c_2

$$\angle C_2 = \angle B - \angle A$$

$$53.42 - 42$$

$$\angle C_2 = 11.42$$

$$\frac{c_2}{\sin 11.42} = \frac{10}{\sin 42}$$

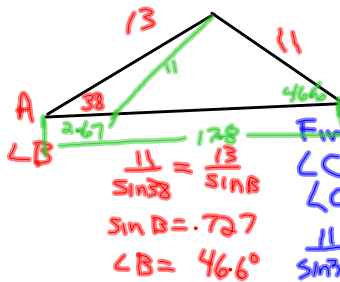
$$c_2 = 2.9$$

#2 Ambiguous Triangle

$\angle A = 38$ side $a = 11$

side $b = 13$ Find both values of c

1) Find $\angle B$



$$\frac{11}{\sin 38} = \frac{13}{\sin B}$$

$$\sin B = .727$$

$$\angle B = 46.6^\circ$$

Find c_1

$$\angle C = 180 - 38 - 46.6$$

$$\angle C = 95.4$$

$$\frac{11}{\sin 38} = \frac{c_1}{\sin 95.4}$$

$$c_1 = 17.8$$

Find c_2

$$\angle C_2 = \angle B - \angle A$$

$$\angle C_2 = 8.6^\circ$$

$$\frac{11}{\sin 38} = \frac{c_2}{\sin 8.6}$$

$$c_2 = 2.67$$