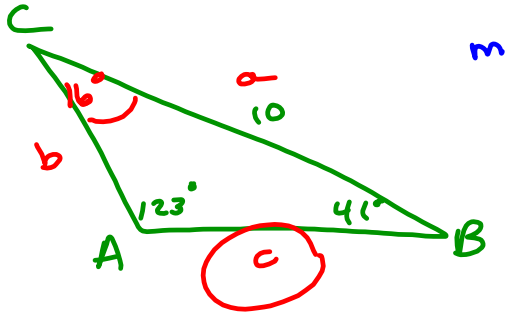
LAW OF SINES

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

EX1) Given (AAS) 2 angles + 1 side

Given $A = 123°$, $B = 41°$ and $a = 10$ find c

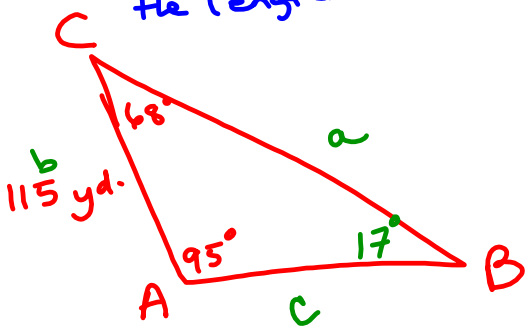


$m\angle C = 180 - (123 + 41) = 16°$

$$\frac{c}{\sin 16°} = \frac{10}{\sin 123°}$$

$$c = \frac{10 \sin 16°}{\sin 123°} \approx 3.3$$

EX2) A triangular plot of land has interior angles $A=95^\circ$, $C=68^\circ$. If the side between these angles is 115 yds long, what are the lengths of the other 2 sides?



$m\angle B = 180-(95+68) = 17^\circ$

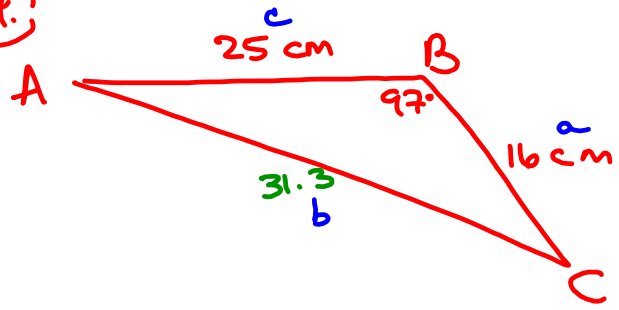
$$\frac{a}{\sin 95} = \frac{115}{\sin 17}$$

$$a = \frac{115\sin 95}{\sin 17} \approx 391.8$$

$$\frac{c}{\sin 68} = \frac{115}{\sin 17}$$

$$c = \frac{115\sin 68}{\sin 17} \approx 364.7$$

14.



$$b = \sqrt{16^2+25^2-2\cdot 16\cdot 25\cos 97^\circ}$$

$$b \approx 31.3 \text{ cm}$$

$$\frac{\sin A}{16} = \frac{\sin 97}{31.3}$$

$$\sin A = \frac{16\sin 97}{31.3}$$

$$A = \sin^{-1}\left(\frac{16\sin 97}{31.3}\right)$$

$$A \approx 30.5^\circ$$

$\angle C = 180-(97+30.5)$

$= 52.5^\circ$