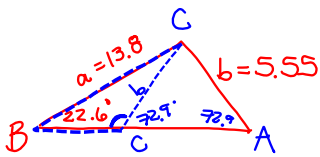


Solve the triangle (Find  $\angle A$ ,  $\angle C$ , & side  $c$ ).

18.  $B = 22.6^\circ$ ,  $b = 5.55$ ,  $a = 13.8$



ASS,  $b < a \Rightarrow 2$  solutions

$$A_2 = 180^\circ - 72.9^\circ = 107.1^\circ$$

$$C_2 = 180^\circ - 107.1^\circ - 22.6^\circ = 50.3^\circ$$

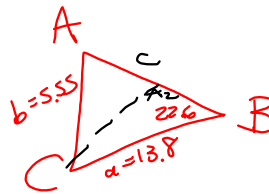
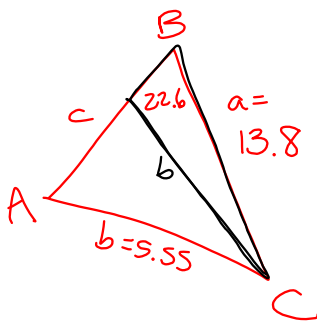
$$c_2 = \frac{5.55 \sin 50.5^\circ}{\sin 22.6^\circ} = 11.1$$

$$\frac{\sin A}{13.8} = \frac{\sin 22.6^\circ}{5.55}$$

$$A_1 = \sin^{-1}\left(\frac{13.8 \sin 22.6^\circ}{5.55}\right) = 72.9^\circ$$

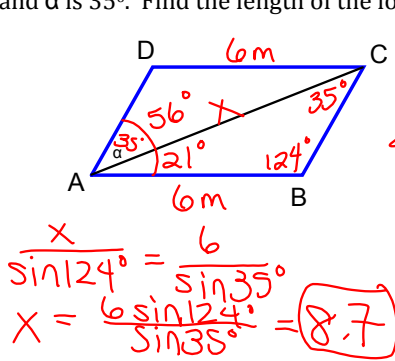
$$C_1 = 180^\circ - 22.6^\circ - 72.9^\circ = 84.5^\circ$$

$$c_1 = \frac{5.55 \sin 84.5^\circ}{\sin 22.6^\circ} = 14.4$$



7.1 #28

The longer side of a parallelogram is 6.0 meters. The measure of angle BAD is  $56^\circ$  and  $\alpha$  is  $35^\circ$ . Find the length of the longer diagonal.



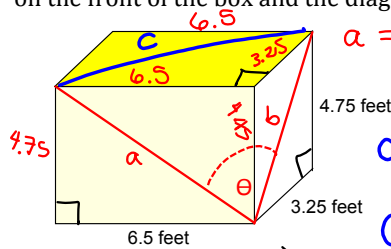
$\angle CAB = 56^\circ - 35^\circ = 21^\circ$   
 $\angle ABC = 180^\circ - 21^\circ - 35^\circ = 124^\circ$

parallel lines cut by a transversal form equal alternate interior angles



7.2 #41

The rectangular box in the figure measures 6.50 feet by 3.25 feet by 4.75 feet. Find the measure of the angle  $\theta$  that is formed by the union of the diagonal shown on the front of the box and the diagonal shown on the right side of the box.



$a = \sqrt{6.5^2 + 4.75^2} = 8.1$

$b = \sqrt{4.75^2 + 3.25^2} = 5.8$

$c = \sqrt{6.5^2 + 3.25^2} = 7.3$

$c^2 = a^2 + b^2 - 2ab \cos \theta$

$2ab \cos \theta = a^2 + b^2 - c^2$

$\cos \theta = \frac{a^2 + b^2 - c^2}{2ab}$

$\theta = \cos^{-1} \left( \frac{a^2 + b^2 - c^2}{2ab} \right)$

$\theta = \cos^{-1} \left( \frac{8.1^2 + 5.8^2 - 7.3^2}{2(8.1)(5.8)} \right)$   
 $= 60.7^\circ$