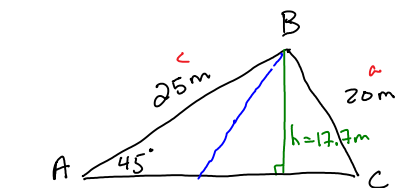


# Sine Law Part 2

April-30-19  
11:32 AM

PRE-CALCULUS 11  
TRIGONOMETRY  
SINE LAW PART 2

- 1) Two students are holding ropes that are connected to a helium-filled balloon that is floating above the students. Alex's rope is 25 m long at an angle of inclination of  $45^\circ$ . Carmen's rope is 20 m long. To the nearest metre, determine the distance between Alex and Carmen.



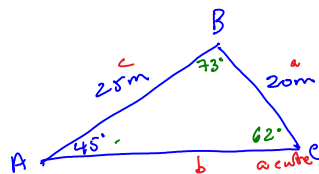
$$25 \left[ \sin 45^\circ = \frac{h}{25} \right]$$

$$(25)(\sin 45^\circ) = h$$

$$17.7\text{m}$$

$$h < a < c$$

2 triangles



$$\frac{\sin A}{a} = \frac{\sin C}{c}$$

$$100 \left[ \frac{\sin 45^\circ}{20} = \frac{\sin C}{25} \right]$$

$$\frac{(5)(\sin 45^\circ)}{4} = \frac{\sin C}{4}$$

$$\sin C = 0.88388\dots$$

$$\underline{\angle C = 62^\circ}$$

$$180^\circ - 45^\circ - 62^\circ$$

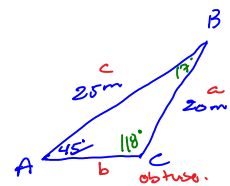
$$\underline{\angle B = 73^\circ}$$

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

$$200 \left[ \frac{\sin 45^\circ}{20} = \frac{\sin 73^\circ}{b} \right]$$

$$\frac{\sin 45^\circ \cdot b}{\sin 45^\circ} = \frac{(20)(\sin 73^\circ)}{\sin 45^\circ}$$

$$\boxed{AC = 27\text{m}}$$



$$\text{reference } \angle = 62^\circ$$

$$180^\circ - 62^\circ$$

$$\underline{\angle C = 118^\circ}$$

$$180^\circ - 45^\circ - 118^\circ$$

$$\underline{\angle B = 17^\circ}$$

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

$$200 \left[ \frac{\sin 45^\circ}{20} = \frac{\sin 17^\circ}{b} \right]$$

$$\frac{\sin 45^\circ \cdot b}{\sin 45^\circ} = \frac{(20)(\sin 17^\circ)}{\sin 45^\circ}$$

$$\boxed{AC = 8\text{m}}$$

Assignment: Pg. 478 #3, 4, 5, 6, 7, 9