

**WS#7-2****The Law of Sines**

1. The Law of Sines states \_\_\_\_\_

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2. Possibilities:

**Case 1: SAA OR ASA**

Solve the triangle:  $\alpha = 35^\circ, \beta = 15^\circ, c = 5$

**Case 2: SSA or the Ambiguous Case**

No triangle  $a < b \sin \alpha$

One triangle  $a = b \sin \alpha$  or  $a \geq b$

Two triangles  $b \sin \alpha < a < b$

A. Solve the triangle:  $a = 3, b = 2, \alpha = 40^\circ$

B. Solve the triangle:  $a = 2, c = 1, \gamma = 50^\circ$

C. Solve the triangle:  $a = 6, b = 8, \alpha = 35^\circ$

3. To measure the height of a mountain, a surveyor takes two sightings of the peak at a distance 900 meters apart on a direct line to the mountain. The first observation results in an angle of elevation of  $47^\circ$  and the second results in an angle of elevation of  $35^\circ$ . If the transit is 2 meters high, what is the height of the mountain?

4. Coast Guard Zulu is located 120 miles due west of Station X-ray. A ship at sea sends an SOS call that is received by each station. The call to station Zulu indicates that the bearing of the ship from Zulu is  $N40^\circ E$ . The call to Station X-ray indicates that the bearing of the ship from X-ray is  $N30^\circ W$ .

A. How far is each station from the ship?

B. If a helicopter capable of flying 200 mph is dispatched from the station nearest to the ship, how long will it take to reach the ship?