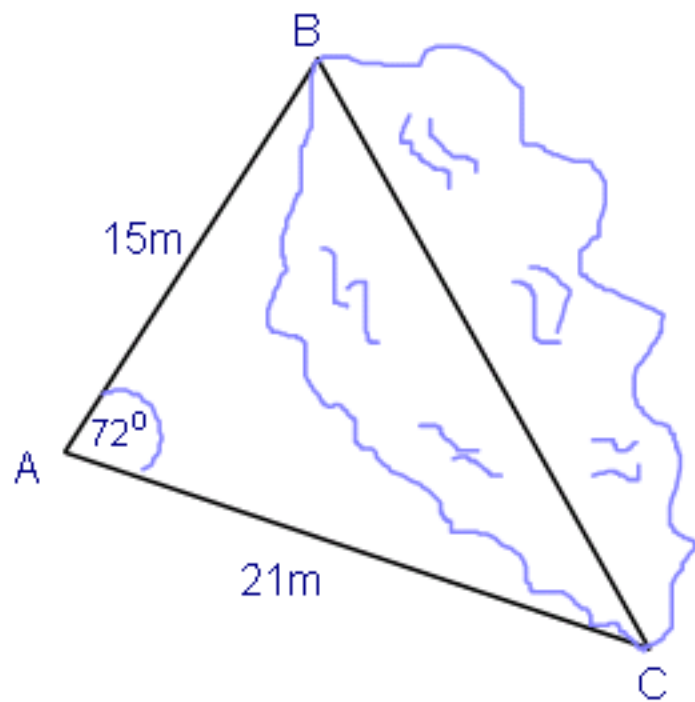


### Bell Activity:

A surveyor finds that the angle at point A (below) between his sightings of points B and C on either side of a pond is  $72^\circ$ . Find BC, the distance across the pond, to the nearest tenth of a meter.



$$a^2 = 15^2 + 21^2 - 2(15)(21)\cos 72^\circ$$

$$a^2 = 471.32$$

$$a = 21.7\text{m}$$

### 5.8 - Law of Cosines

$$a^2 = b^2 + c^2 - 2bc \cdot \cos A$$

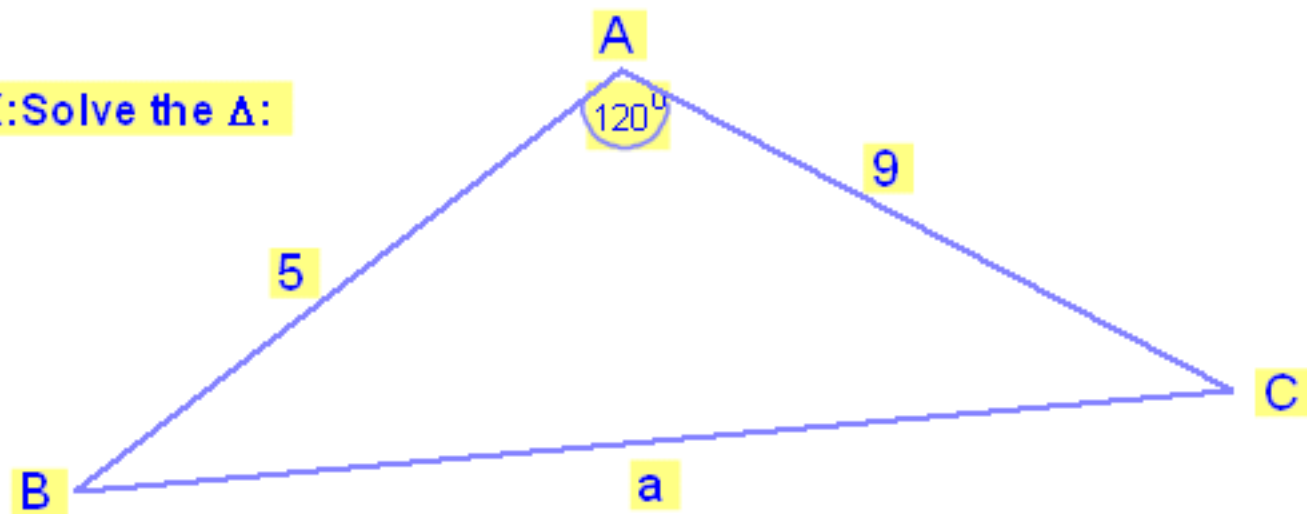
$$b^2 = a^2 + c^2 - 2ac \cdot \cos B$$

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

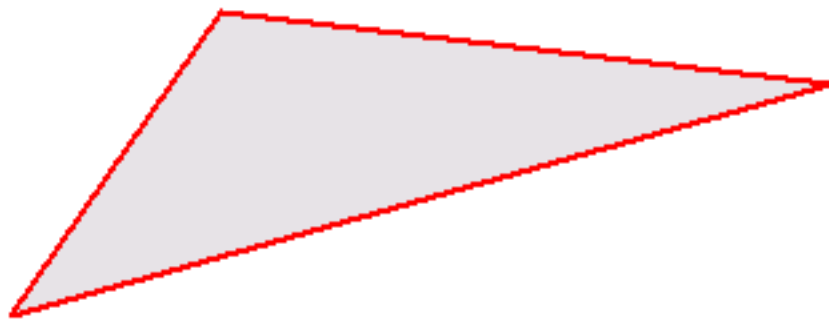
Use when law of sines won't work!  
(SAS or SSS)



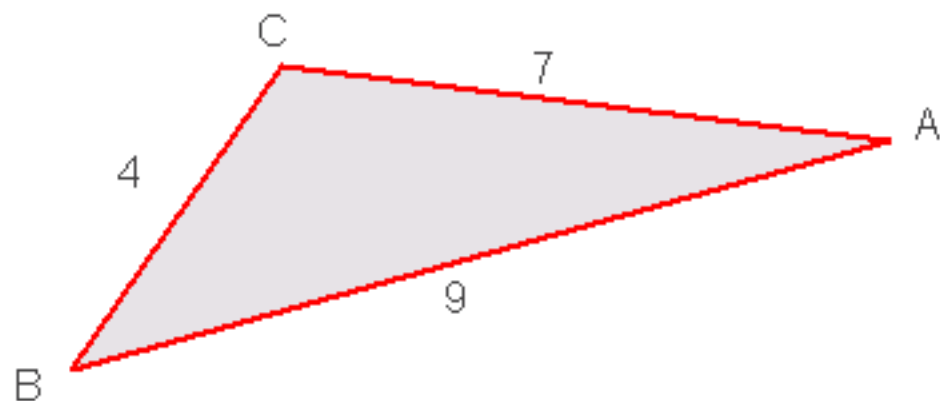
EX: Solve the  $\Delta$ :



Find angle A if  $a = 4$ ,  $b = 7$  and  $c = 9$



Find the area of  $\triangle ABC$  if  $a = 4$ ,  $b = 7$  and  $c = 9$

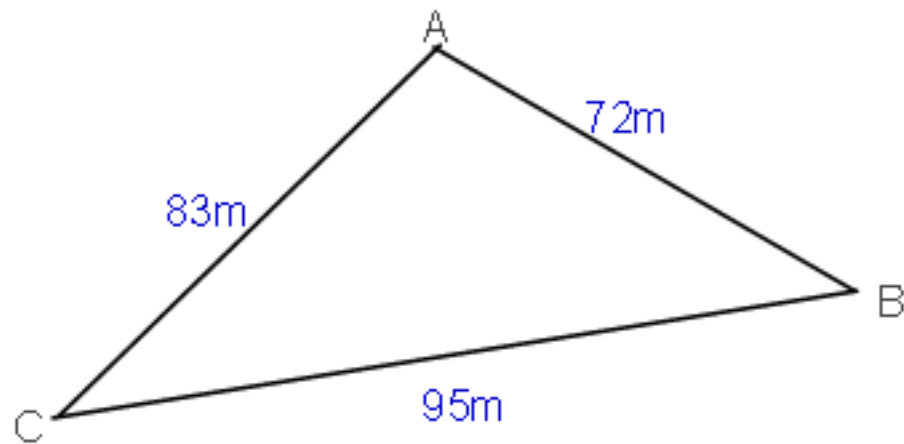


Another formula for area if given 3 sides of triangle:

Heron's Formula:  $K = \sqrt{s(s-a)(s-b)(s-c)}$

Where  $s = \frac{1}{2}$  perimeter of triangle and  $a, b, c$  are side measures

EX: Find the area of  $\triangle ABC$



UDO:

Suppose you want to fence a triangular lot. Two sides measure 84 feet and 78 feet and the include angle is  $102^\circ$ . What is the length of the whole fence to the nearest foot?

