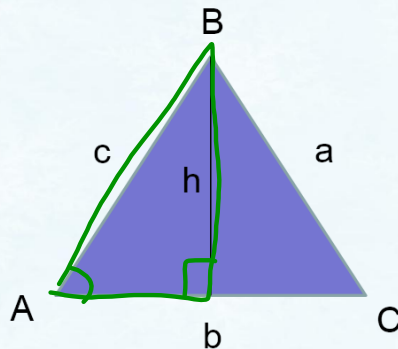


## Area of a Triangle

$$c \cdot \sin A = \frac{h}{b} \cdot c$$

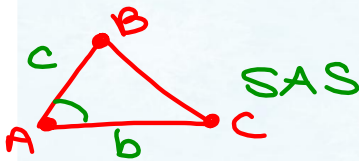
$$h = c \sin A$$



$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2}b(c \sin A)$$

$$A = \frac{1}{2}bc \sin A$$



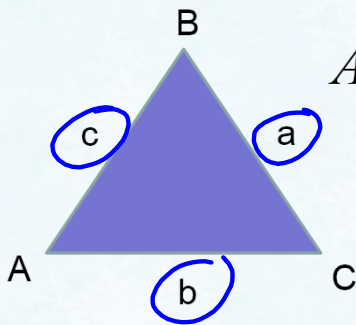
$$\text{Area} = \frac{1}{2}bc \sin A \quad \text{Area} = \frac{1}{2}ab \sin C \quad \text{Area} = \frac{1}{2}ac \sin B$$

Ex.1: Find the area of a triangle with two sides of lengths 90m and 52m and an included angle of 102°.

$$A = \frac{1}{2} \cdot 90 \cdot 52 \cdot \sin 102^\circ$$

$$A = 2288.9 \text{ m}^2$$

## Area of a Triangle Heron's Area Formula



$$Area = \sqrt{s(s-a)(s-b)(s-c)}$$

$$s = \frac{a+b+c}{2}$$

*Semi-perimeter*

Ex.2: Find the area of a triangle with side lengths of 43m, 53m and 72m.

$$S = \frac{43+53+72}{2} = 84$$

$$A = \sqrt{84(84-43)(84-53)(84-72)}$$

$$A = \sqrt{84(41)(31)(12)}$$

$$A = \sqrt{1281168}$$

$$A = 1131.9 \text{ m}^2$$