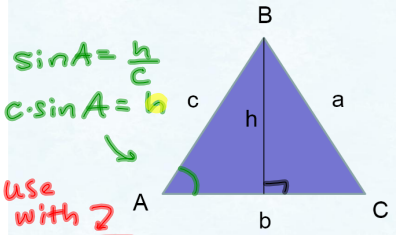
Area of a Triangle



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

$c \cdot \sin A = h$

use with 2 SAS

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

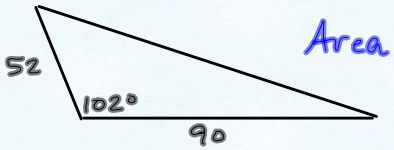
$A = \frac{1}{2}b(c\sin A)$

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

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

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

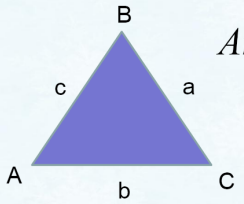
angle in between



$Area = \frac{1}{2}(52)(90)\sin 102°$

$Area = 2288.9\ m^2$

Area of a Triangle
Heron's Area Formula

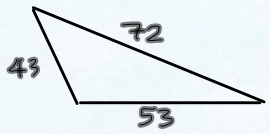


$Area = \sqrt{s(s-a)(s-b)(s-c)}$

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

s = semiperimeter

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



$s = \frac{43+53+72}{2}$

$s = \frac{168}{2} = 84$

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

$= \sqrt{84 \cdot 41 \cdot 31 \cdot 12} = 1131.9\ m^2$