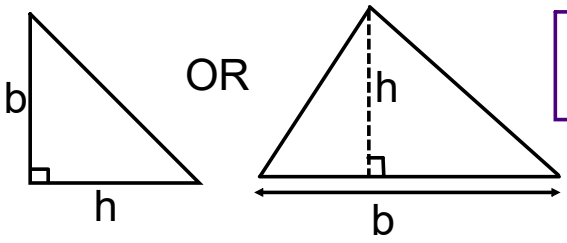
Area of Triangles

1) Right Angled Triangle

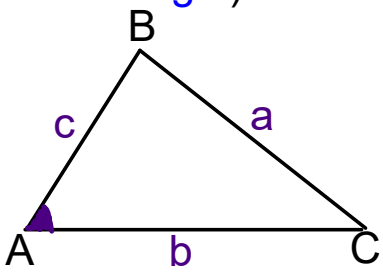


$$A = \frac{b \times h}{2}$$

2) Area of Non-Right Angled Triangles

1) Sandwich formula

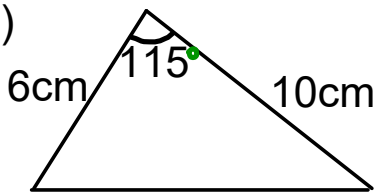
(a.k.a area of a triangle given 2 sides and the included angle)



$$A = \frac{b \cdot c \cdot \sin A}{2}$$

Examples: Find the area of the following

1)

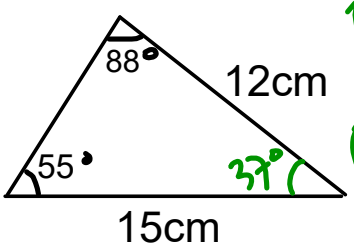


$$A = \frac{b \cdot c \cdot \sin A}{2}$$

$$= \frac{6 \cdot 10 \cdot \sin 115°}{2}$$

$$= 27.19\ cm^2$$

2)



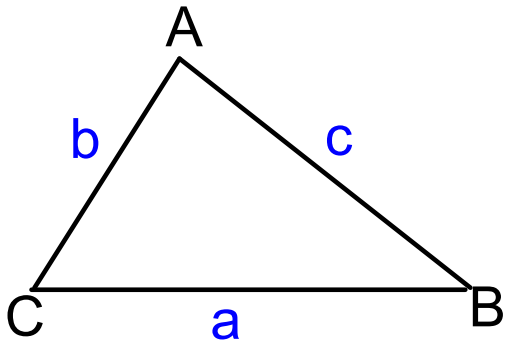
① $180° - 88° - 55° = 37°$

② $A = \frac{15 \cdot 12 \cdot \sin 37°}{2}$

$$= 54.16\ cm^2$$

Hero`s Formula

Use Hero`s Formula when you are trying to find the area of a non-right angled triangle and you are only given 3 sides.



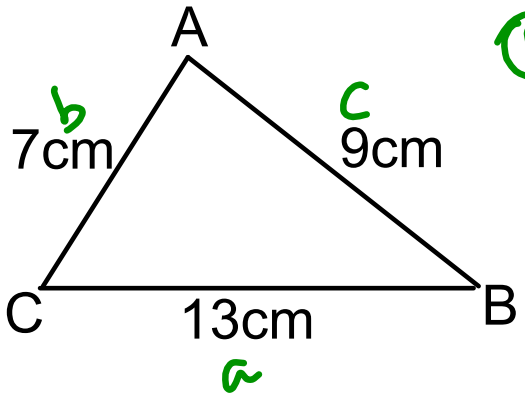
Formula:

$$A = \sqrt{p(p-a)(p-b)(p-c)}$$

Where $p = \frac{a+b+c}{2}$

"semi-perimeter"

Example: Find the area



① $p = \frac{13+7+9}{2} = \frac{29}{2} = 14.5$

② $A = \sqrt{14.5(14.5-13)(14.5-7)(14.5-9)}$

$= \sqrt{14.5(1.5)(7.5)(5.5)}$

$= \sqrt{897.1875}$

$= 29.95\ cm^2$