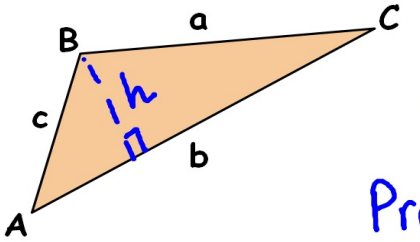
13-5/13-6 Area of a Triangle



(for SAS △s)

$$A = \frac{1}{2}ab\sin C$$

Proof:

$$\Delta\text{Area} = \frac{1}{2}bh$$

$$\sin C = \frac{h}{a}$$

$$h = a\sin C$$

$$\text{Area} = \frac{1}{2}ba\sin C$$

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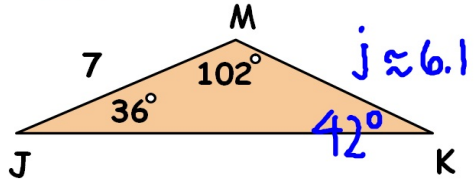
ex. 1 Find area of ΔJKM



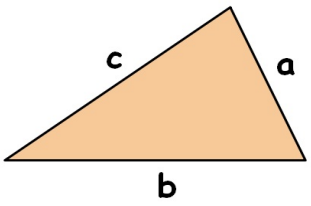
$$\frac{\sin 42^\circ}{7} = \frac{\sin 36^\circ}{j}$$

$$j \approx 6.1$$

$$A = \frac{1}{2}(7)(6.1)\sin 102^\circ$$

$$A \approx 20.9\ u^2$$

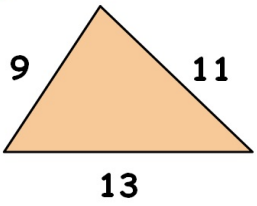
Heron's Formula (for SSSΔs)



semiperimeter $S = \frac{a+b+c}{2}$

Δ Area $= \sqrt{S(S-a)(S-b)(S-c)}$

ex. 2



$S = \frac{9+11+13}{2} = 16.5$

$A = \sqrt{16.5(16.5-9)(16.5-11)(16.5-13)}$

$7.5 \quad 5.5 \quad 3.5$

$A = 48.8\ u^2$