

Apr. 30, 2014

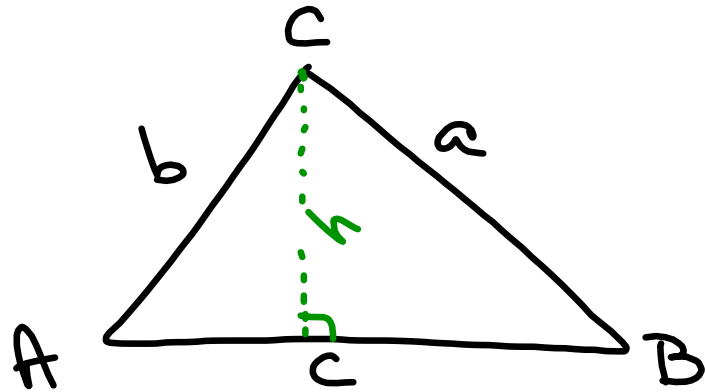
Sect. 6-3

Areas of Triangles

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

Heron's Formula

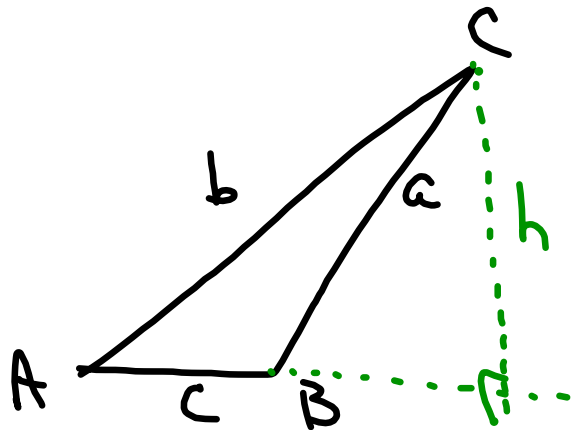
Triangle Area



$$A = \frac{1}{2} \text{base} (\text{height})$$

$$h : \sin A = \frac{h}{b}$$

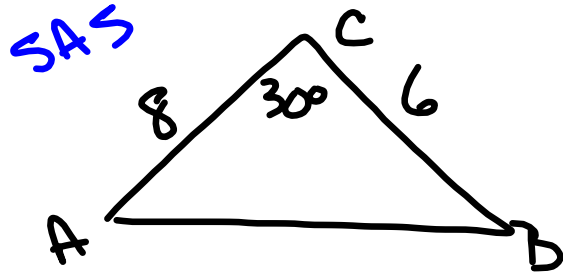
$$h = b \sin A$$



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

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

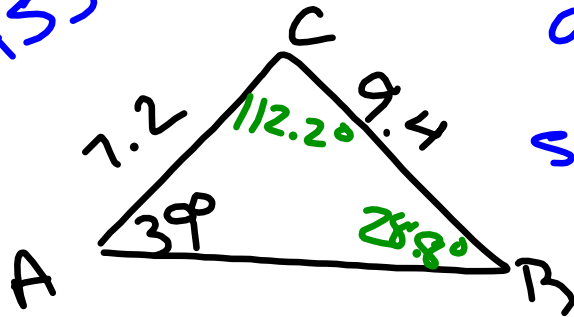
$$a = 6\text{m} \quad b = 8\text{m} \quad m\angle C = 30^\circ$$



$$\begin{aligned} A &= \frac{1}{2}(6)(8)\sin 30^\circ \\ &= \frac{1}{2}(6)(8)\left(\frac{1}{2}\right) \\ &= 12\text{m}^2 \end{aligned}$$

$$a = 9.4 \text{ ft} \quad b = 7.2 \text{ ft} \quad m\angle A = 39^\circ$$

ASS



$$9.4 > 7.2$$

So 1 Δ .Wrong \angle .

$$\frac{9.4}{\sin 39^\circ} = \frac{7.2}{\sin B}$$

$$m\angle C = 180^\circ - 39^\circ - 28.8^\circ$$

$$m\angle C = 112.2^\circ$$

$$m\angle B = 28.8^\circ$$

So...

$$\begin{aligned} A &= \frac{1}{2} ab \sin C \\ &= \frac{1}{2}(9.4)(7.2) \sin 112.2^\circ \end{aligned}$$

$$A = 31.3 \text{ ft}^2$$

For SAS:

Use formula directly

For AAS, ASS, ASA:

Use LoS to find missing info,
then use formula.

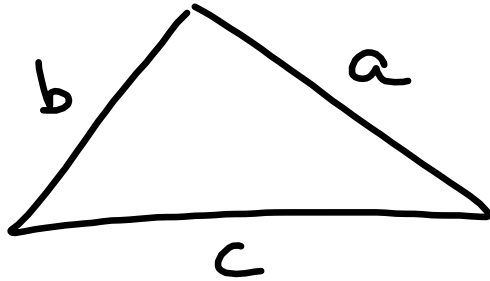
* Be careful of ASS, Is there a Δ ?

For SSS:

Use Heron's Formula

Heron's Formula

SSS



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

s = semiperimeter

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

$$a = 12 \text{ m} \quad b = 8 \text{ m} \quad c = 6 \text{ m}$$

$$s = \frac{1}{2}(12 + 8 + 6) = 13 \text{ m}$$

$$A = \sqrt{13(13-12)(13-8)(13-6)}$$

$$A = \sqrt{13(1)(5)(7)}$$

$$A = \sqrt{455}$$

$$A = 21.3 \text{ m}^2$$