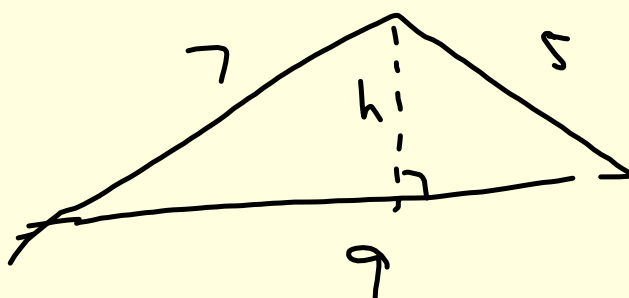


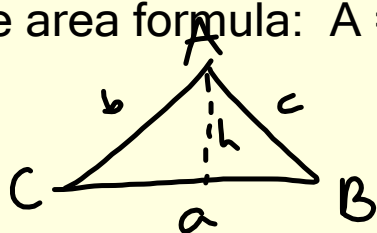
Area of Triangles

How do we find the area of a triangle when we don't have base and height?

~~W~~ Find the area of a triangle with sides 9, 7, and 5.



Derive area formula: $A = \frac{1}{2} ab \sin C$



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

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

$$h = b \sin C$$

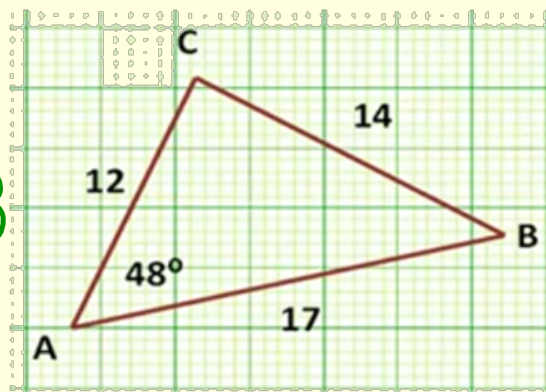
$$A = \frac{1}{2} ab \sin C$$

1. Find the area of the triangle.

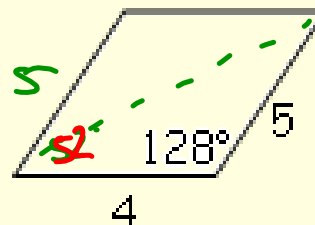
$$A = \frac{1}{2} ab \sin C$$

$$A = \frac{1}{2} (17)(12) \sin 48^\circ$$

$$A = 75.8$$



2. Find the area of the parallelogram.

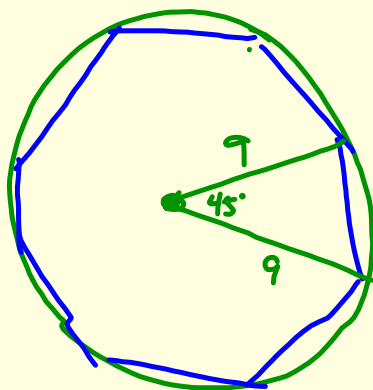


$$A_{\triangle} = \frac{1}{2}(4)(5)\sin 128$$

$$A_{\triangle} = 7.88$$

$$A_{\square} = 2(7.88) = 15.8$$

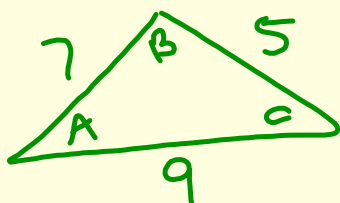
3. Find the area of a regular octagon inscribed in a circle of radius 9 inches.



$$A_{\Delta} = \frac{1}{2} (9)(9) \sin 45$$
$$= 28.6$$

$$A_{\text{oct}} = 8(28.6)$$
$$= \textcircled{229}$$

4. The area of a triangle with sides 9 cm, 7 cm, and 5 cm is 17.4123 cm^2 . Find all three angles of the triangle.



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

$$17.4123 = \frac{1}{2} (7)(9) \sin A \quad 17.4123 = \frac{1}{2} (5)(9) \sin C$$

$$\sin A = 0.5528$$

$$\sin C = 0.77388$$

$$\angle A \approx 33.6^\circ$$

$$\angle C \approx 50.7^\circ$$

$$\angle B \approx 95.7^\circ$$

Homework Assignment
WS attached to class notes