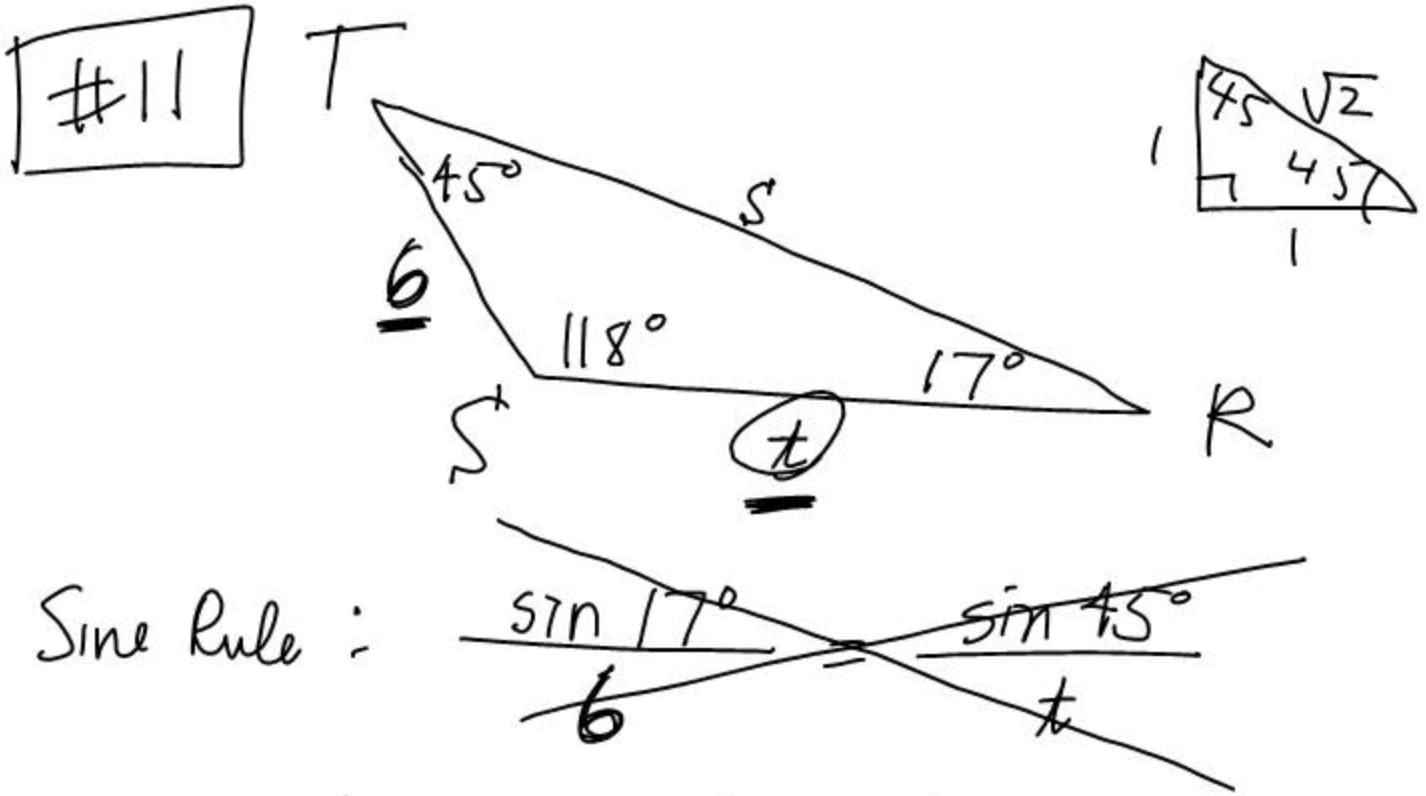
#11



Sine Rule : $\frac{\sin 17^\circ}{6} = \frac{\sin 45^\circ}{t}$

$t \cdot \sin 17^\circ = 6 \cdot \sin 45^\circ$

$t = \frac{6 \cdot \sin 45^\circ}{\sin 17^\circ}$

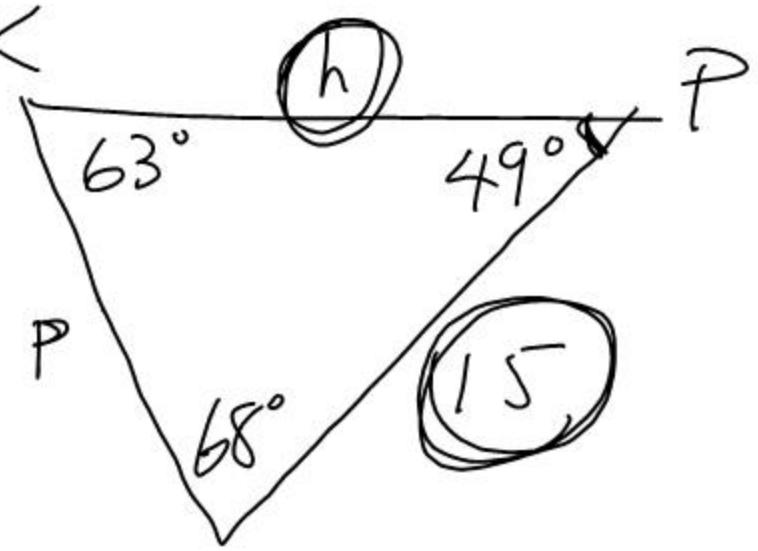
$t = 14.511$

between 6 and 14.511

$\text{Area} = \frac{1}{2}(6)(14.511)\sin 118^\circ$

$\text{Area} = 38.4$

#15



Sine Rule: $\frac{\sin 63^\circ}{15} = \frac{\sin 68^\circ}{h}$

$$h = \frac{15 \cdot \sin 68^\circ}{\sin 63^\circ}$$

$$h = 15.609$$

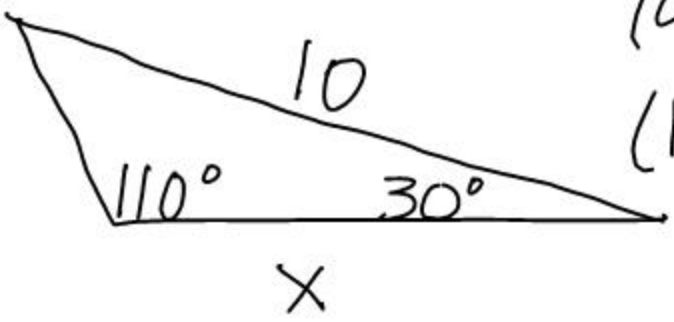
$$\text{Area} = \frac{1}{2}(15)(15.609)\sin 49^\circ$$

$$\boxed{\text{Area} = 88.4 \text{ in}^2}$$

CW quiz Jan 10

(1) A triangle has side lengths of 8, 15, and 19. Find its area

(2)



(a) Find side x.

(b) Find the area.

Finding missing sides and angles in a triangle

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① If its a right triangle, use right triangle trig. SOHCAHTOA

② SSS or SAS → Cosine Rule

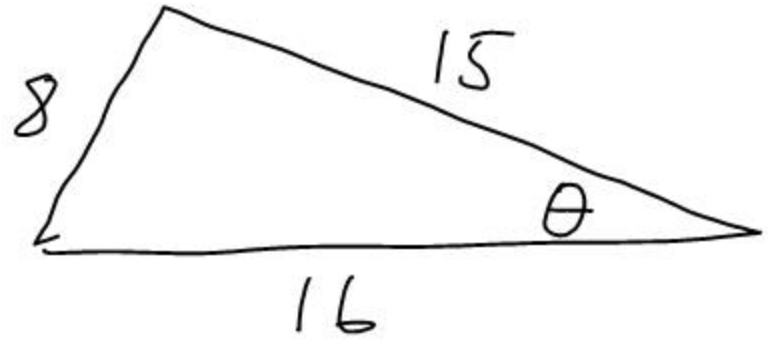
③ All other cases → Sine Rule

The Cosine Rule

Case 1 : SSS

$$\cos\alpha = \frac{b^2 + c^2 - a^2}{2bc}$$

Ex.



Find θ.

opposite from θ

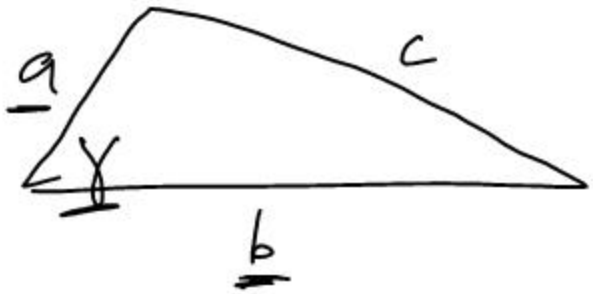
$$\cos\theta = \frac{15^2 + 16^2 - 8^2}{2(15)(16)}$$

$$\cos\theta = 0.86875$$

$\cos^{-1}(0.86875)$

$$\boxed{\theta = 29.7^\circ}$$

Case 2: SAS case



$$c^2 = a^2 + b^2 - 2ab \cdot \cos\gamma$$

opposite each other

Ex. 1

SAS

$$x^2 = 10^2 + 20^2 - 2(10)(20)\cos 72^\circ$$

↑ opposite ends other ↑

$$x^2 = 376.393$$

$$x = 19.4$$

SL
- applications
- Analysis

HL
- Applications (statistics)
- Analysis (Calculus)