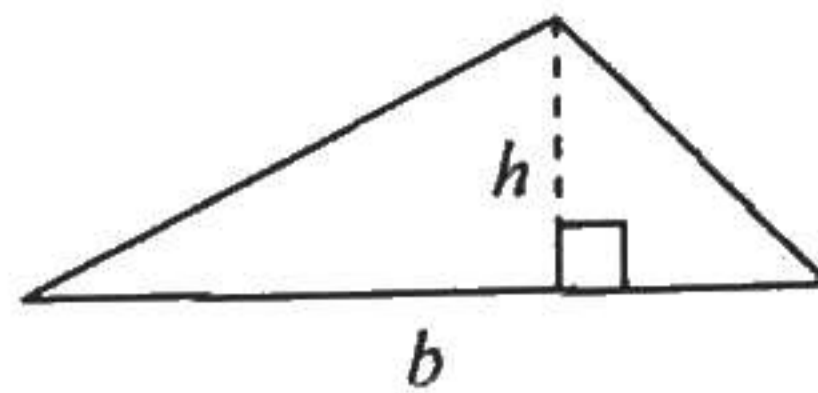


Date _____

8.4 Notes AREA OF A TRIANGLE

Review from Geometry.

1. Area of a Δ given the BASE and HEIGHT

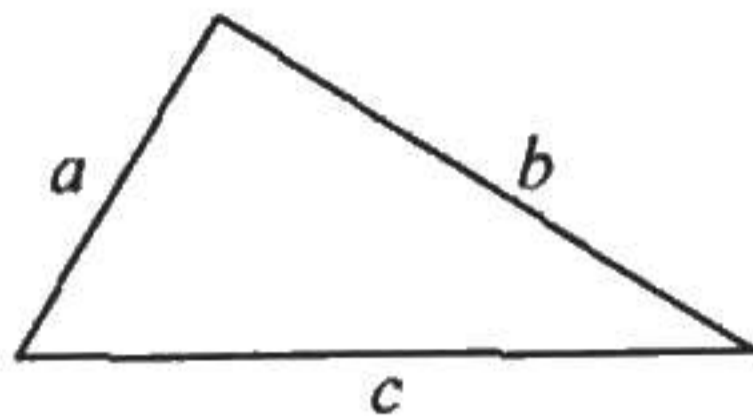


$$A = \frac{1}{2}bh$$

2. Area of a Δ given the LENGTH OF THE SIDES

Example: ΔABC , $a = 30$, $b = 50$, $c = 56$

$$S = \frac{30 + 50 + 56}{2} = 68$$



HERON'S Formula

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

$$\left[s = \frac{a+b+c}{2} \right]$$

$$A = \sqrt{68(68-30)(68-50)(68-56)}$$

$$A = \sqrt{558,144} \approx \boxed{747.1}$$

3. Area of a Δ given TWO SIDES and the INCLUDED ANGLE.

$A_{\Delta} = \frac{1}{2}bh$

$c(\sin A) = \left(\frac{h}{a}\right)a$

$h = c \sin A$

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

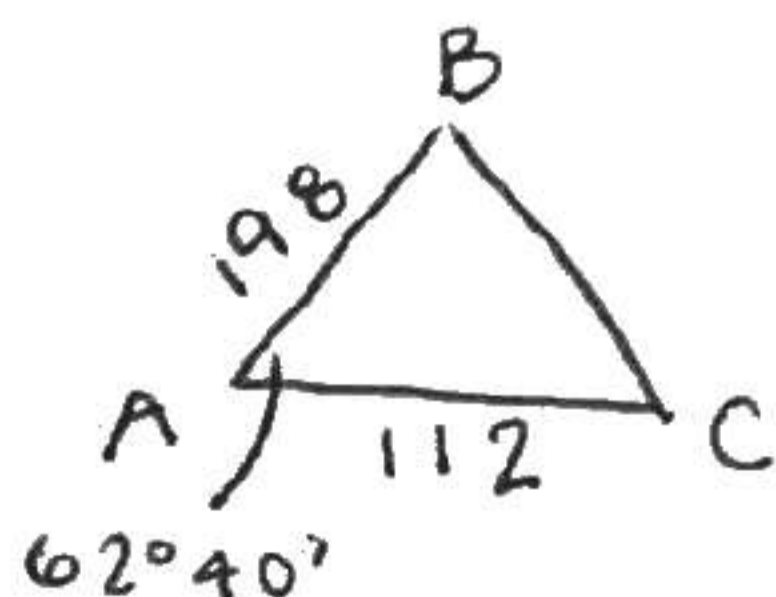
Determine the pattern and write the 3 versions of this area formula.

$$A_{\Delta} = \frac{1}{2}bc \sin A$$

$$= \frac{1}{2}ac \sin B$$

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

Example: ΔABC , $\angle A = 62^{\circ}40'$, $b = 112$, $c = 198$. Draw a good sketch that reflects the given information and find the area.



$$\rightarrow 62 + \frac{40}{60} = 62.67^{\circ}$$

$$A_{\Delta} = \frac{1}{2}(112)(198)\sin 62.67^{\circ}$$

$$A_{\Delta} \approx \boxed{9850.03}$$