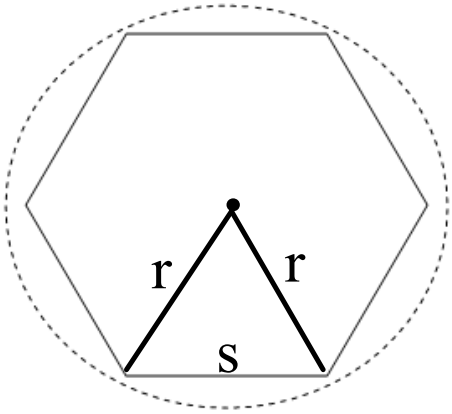
Adv. Alg.-Trig.
Homework: Ditto #2

Tonight's HW:
1) Area Ditto III
2) Test on Thursday!

1) 1.2	2) 8.1	3) 8.6	4) 104.2
5) 82.9	6) 361	7) 350.9	8) 512.7
9) 196.6	10) 135.7		

Area - Given The Radius Notes

Finding the Area of Regular Polygons Given r (Radius)



Step:

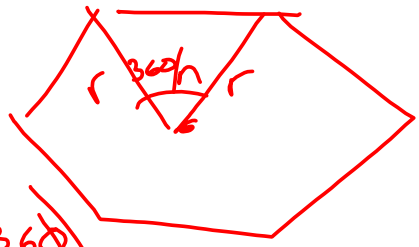
1. Find vertex angle: 360/n

2. Find area of triangle (you already have SAS)

3. Multiply area of triangle by n.

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

$$K_{\triangle} = \frac{1}{2}r^2\sin\left(\frac{360}{n}\right)$$



$$K_{polygon} = n\left(\frac{1}{2}r^2\sin\left(\frac{360}{n}\right)\right)$$

$$K_{polygon} = \frac{n}{2}r^2\sin\left(\frac{360}{n}\right)$$

Area Formulas

Formula	Use when
$K = \frac{1}{2}ab\sin C$	Given SAS
$K = \sqrt{s(s-a)(s-b)(s-c)}$ $s = \frac{1}{2}(a+b+c)$ ← Heron's Formula	Given SSS
nK (n sides)	For area of a regular Polygon
$K = \frac{a^2 \sin B \sin C}{(2\sin A)}$	Given ASA or AAS

Examples:

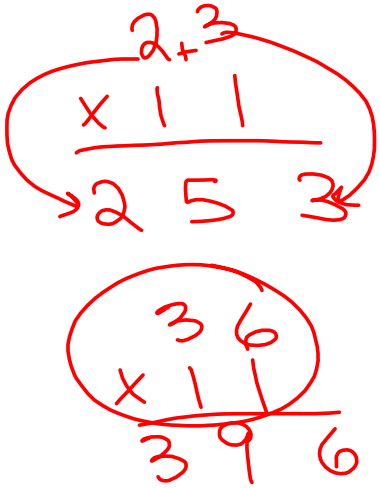
Pentagon

1) If a polygon has 5 sides with a radius of 7.1, find the area of that polygon.

$$K_{poly} = \frac{n}{2} \cdot r^2 \cdot \sin\left(\frac{360}{n}\right)$$

$$K_{poly} = \frac{5}{2}(7.1)^2 \sin 72$$

$$K_{poly} = 119.9$$



$23(10+1)$

$230+23$

253

2) If a polygon has 6 sides (hexagon) with an area of 240, find the radius of that polygon.

$$240 = 3r^2 \sin 60$$

$$\sqrt{\frac{80}{\sin 60}} = r^2$$

$$\sqrt{\frac{80}{\sin 60}} = r$$

$$9.6 = r$$

3) If a polygon has 5 sides with an area of 150, find the radius of that polygon.

$$150 = \frac{5}{2} r^2 \sin 72$$

$$60 = r^2 \sin 72$$

$$\sqrt{\frac{60}{\sin 72}} = r$$

$$63.1 = r$$

Tonight's HW:

1) Area Ditto III

2) Test on Thursday!