

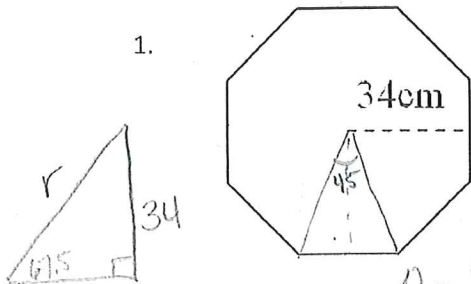
Name: Kley

Date: _____

Area of Regular Polygons- Given an Apothem Homework

Directions: Find the area of the regular polygon. Show all work.

1.



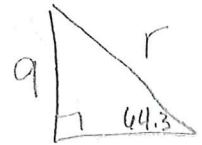
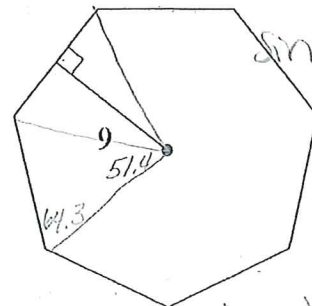
$$\sin 67.5 = \frac{34}{r}$$

$$r = 36.8 \text{ cm}$$

$$A = 8 \left(\frac{1}{2} \right) (36.8)^2 \sin 45$$

$$A \approx 3830.4 \text{ cm}^2$$

2.



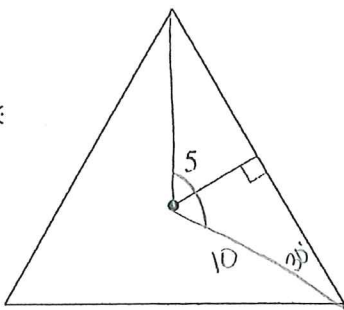
$$\sin 64.3 = \frac{9}{r}$$

$$r = 10$$

$$A = 7 \left(\frac{1}{2} \right) (10)(10) \sin 51.4$$

$$A \approx 273.5 \text{ units}^2$$

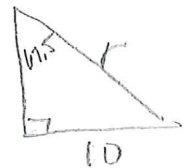
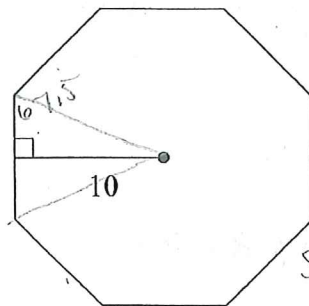
3.



$$A = 3 \left(\frac{1}{2} \right) 10 \cdot 10 \sin 120$$

$$A \approx 129.9 \text{ units}^2$$

4.



$$\sin 67.5 = \frac{10}{r}$$

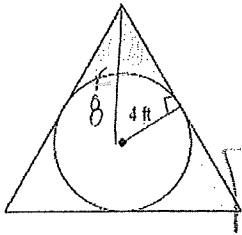
$$r = 10.8$$

$$A = 8 \left(\frac{1}{2} \right) (10.8)^2 \sin 45$$

$$A \approx 329.9 \text{ units}^2$$

Directions: Find the area of the shaded region. Show all work.

5.

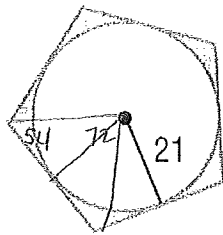
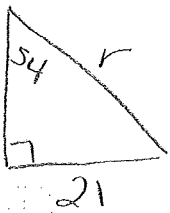


$$A = 3\left(\frac{1}{2}\right)(8^2)\sin 120 - \pi 4^2$$

$$A = 83.1 - 16\pi$$

$$A \approx 32.8 \text{ ft}^2$$

6.

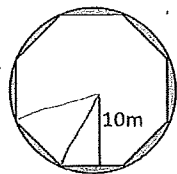
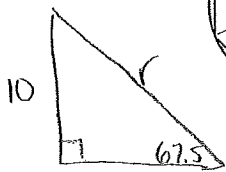


$$A = 5\left(\frac{1}{2}\right)(21)^2 \sin 72 - \pi r^2$$

$$A = 1607.3 - 441\pi$$

$$A \approx 221.9 \text{ units}^2$$

7.



$$A = \pi(10.8)^2 - 8\left(\frac{1}{2}\right)10 \cdot 10 \sin 45$$

$$A = 116.64\pi - 282.8$$

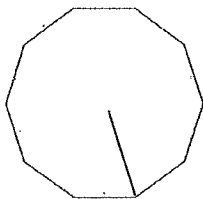
$$\sin 67.5 = \frac{10}{r}$$

$$r = 10.8$$

$$A \approx 83.6 \text{ cm}^2$$

Spiral: Using Radius

8. Find the area of the regular polygon given $r = 14\text{cm}$



$$A = 10\left(\frac{1}{2}\right)(14)(14) \sin 36$$

$$A \approx 576.0 \text{ cm}^2$$