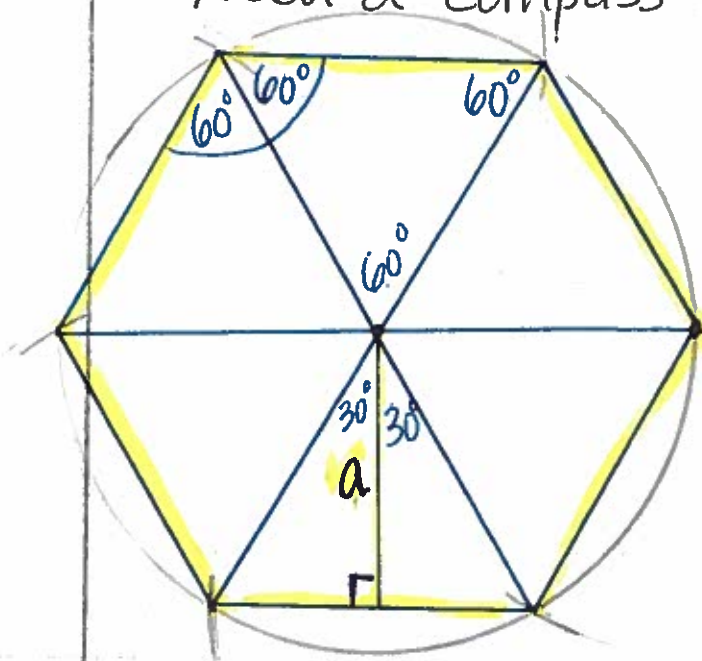


Day 63

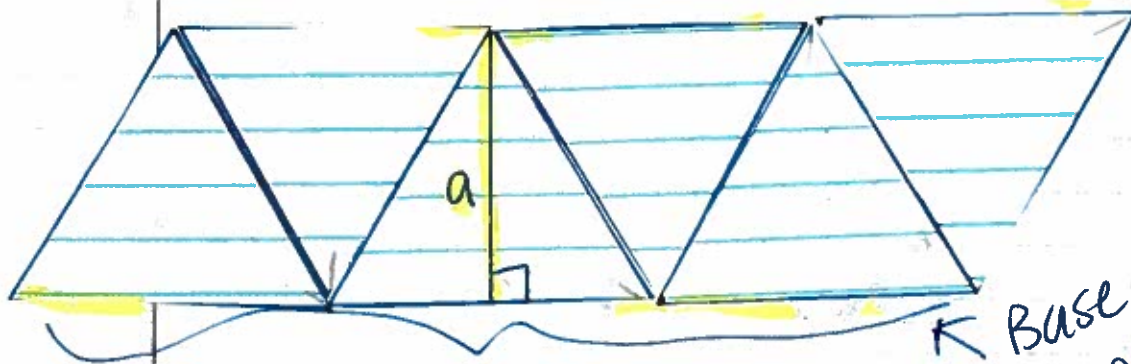
10-3 Area of Regular Polygons

A polygon is **REGULAR** if all sides are \cong and all \angle 's are \cong .

construct a regular hexagon.
Need a compass + ruler.



$a =$ apothem



Base = $\frac{1}{2}$ perimeter polygon

$$\begin{aligned} \text{Parallelogram} &= B \cdot H \\ \text{Polygon} &= \frac{1}{2} \cdot P \cdot a \end{aligned}$$

$$\text{Regular Polygon} = \frac{1}{2} (\text{Perimeter}) (\text{apothem})$$

Find the values of the variables for each regular hexagon. Leave your answers in simplest radical form.

1.

$a = 3.5\sqrt{3}$

$x = 7$

$y = 30^\circ$

$P = 6 \cdot 7 = 42$

sides ↑ measure of 1 side

$A = \frac{1}{2} (42)(3.5\sqrt{3})$

$A = 73.5\sqrt{3}$

2.

$4 = \text{apothem}$

$a = 60^\circ$

$\frac{4}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{4\sqrt{3}}{3}$

$c = d = \frac{4\sqrt{3}}{3} \cdot \frac{2}{1} = \frac{8\sqrt{3}}{3}$ side

Perimeter

$P = \frac{6 \cdot 8\sqrt{3}}{3} = 16\sqrt{3}$

$A = \frac{1}{2} \cdot 16\sqrt{3} \cdot 4$

$A = 32\sqrt{3}$

Each regular polygon has radii and an apothem as shown. Find the measure of each numbered angle.

4.

8

$a = 4$

4

45°

45°

45°

45°

45°

5.

30°

30°

120°

30°

30°

6

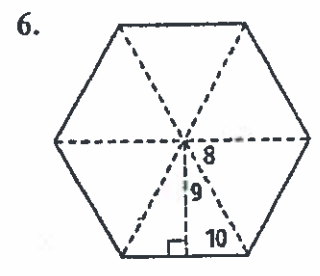
5

6

$\angle 6 = 30^\circ$

$\angle 5 = 60^\circ$

$\angle 7 = 120^\circ$



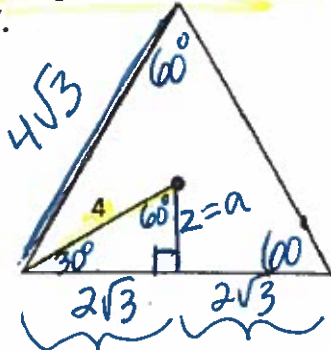
$P = 8 \cdot 4 = 32$

$A = \frac{1}{2} (32)(4)$

$A = 64 \text{ sq. units}$

Find the area of each equilateral triangle, given the radius. Leave your answers in simplest radical form.

7.



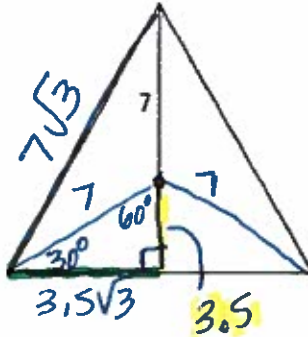
$$P = 3 \cdot 4\sqrt{3}$$

$$P = 12\sqrt{3}$$

$$A = \frac{1}{2}(12\sqrt{3})(2)$$

$$A = 12\sqrt{3} \text{ units}^2$$

8.



$$P = 3 \cdot 7\sqrt{3}$$

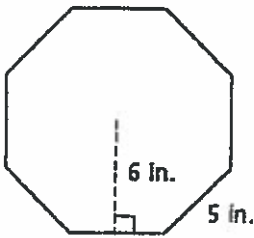
$$P = 21\sqrt{3}$$

$$A = \frac{1}{2}(3.5)(21\sqrt{3})$$

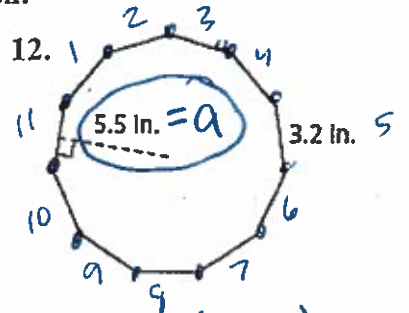
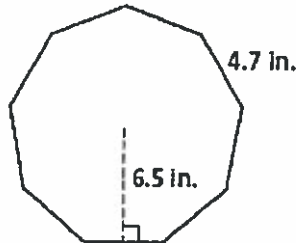
$$A = 36.75\sqrt{3}$$

Find the area of each regular polygon to the nearest square inch.

10.



11.

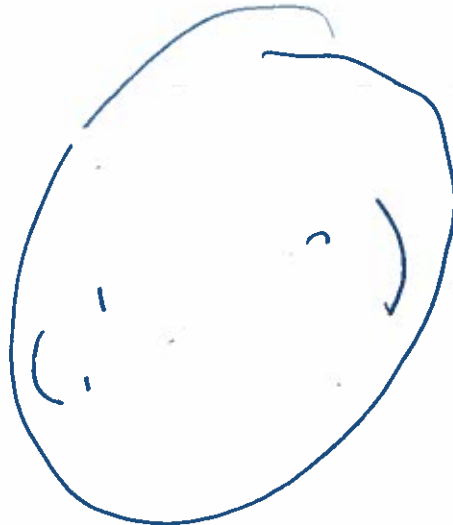


$$P = 12(3.2)$$

$$P = 38.4$$

$$A = \frac{1}{2}(38.4)(5.5)$$

$$A = 105.6 \text{ in}^2$$



Name _____

PRACTICE WORKSHEET

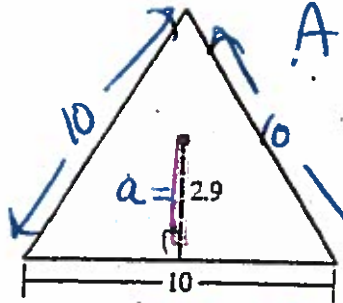
Date _____

Lesson 10.3

Block _____

Find the area of each regular polygon.

1.



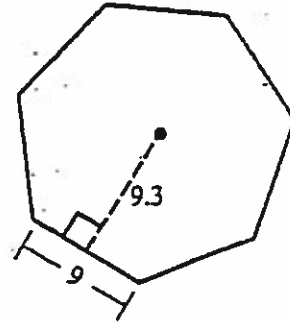
$$A = \frac{1}{2}Pa$$

$$P = 3 \cdot 10 = 30$$

$$A = \frac{1}{2}(30)(2.9)$$

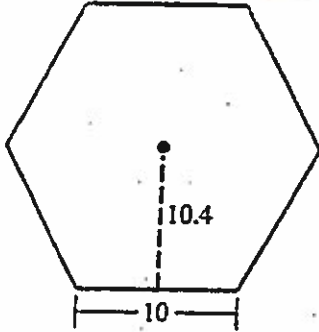
Area = ~~43.5~~ 43.5 cm^2

2.



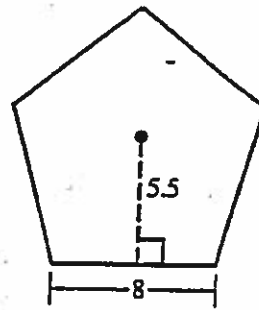
Area = _____

3.



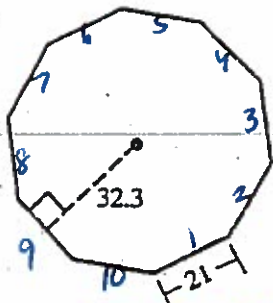
Area = _____

4.



Area = _____

5.



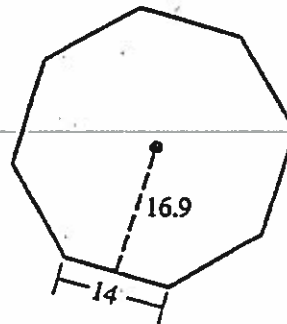
$$P = 10(21)$$

$$P = 210$$

$$A = \frac{1}{2}(210)(32.3)$$

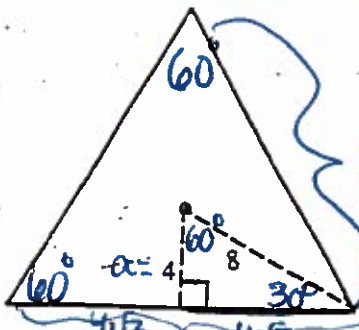
Area = ~~3391.5~~ 3391.5 cm^2

6.



Area = _____

7.



$$8\sqrt{3}$$

$$P = 3 \cdot 8\sqrt{3}$$

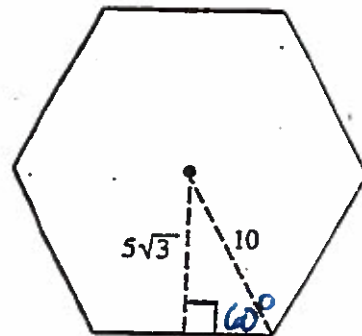
$$P = 24\sqrt{3}$$

Area = $\frac{1}{2}(24\sqrt{3})(4)$

$$\frac{1}{2}(24\sqrt{3})(4)$$

$$48\sqrt{3} \dots 2$$

8.



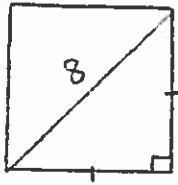
Area = _____

3

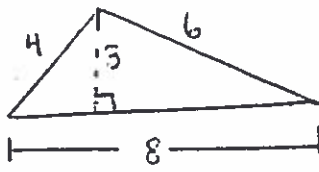
10.1-10.3 Find the AREA of the following figures.



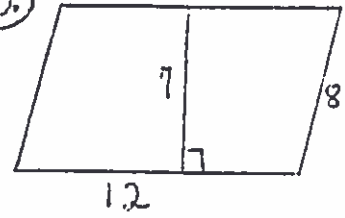
①



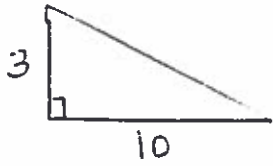
②



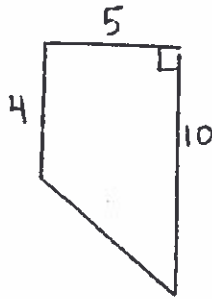
③



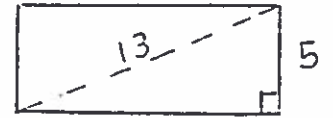
④



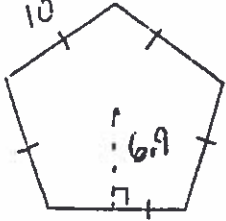
⑤



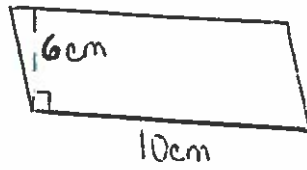
⑥



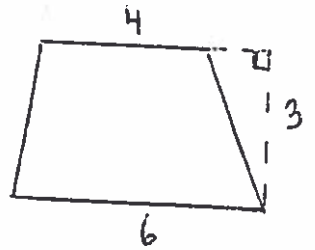
⑦



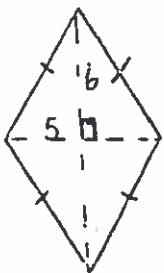
⑧



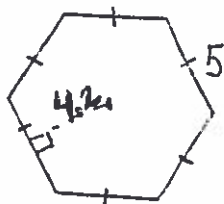
⑨



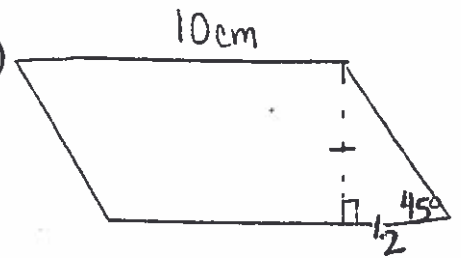
⑩



⑪



⑫



⑬

