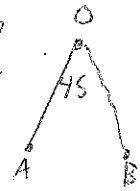
NAME _____ DATE _____ SCORE _____

Areas of Regular Polygons

For use after Section 11–4

O is the center of a regular n-sided polygon with consecutive vertices A and B.



360/45

360/30 = 12

1. If $\angle AOB$ has the given measure, find the value of n.

   a. $m\angle AOB = 45$, $n =$ 8 b. $m\angle AOB = 30$, $n =$ 12

2. Find the measure of $\angle AOB$ for the given value of n.

   a. $n = 10$, $m\angle AOB =$ _____ b. $n = 15$, $m\angle AOB =$ _____

Find the apothem of each regular polygon.

3. Hexagon with radius 8 $4\sqrt{3}$

4. Square with side 10 _____

5. Equilateral triangle with radius $4\sqrt{3}$ $2\sqrt{3}$

Find the radius of each regular polygon.

6. Square with area 64 _____

7. Triangle with apothem $12\sqrt{3}$ $24\sqrt{3}$

Find the perimeter of each regular polygon.

8. Triangle with radius $4\sqrt{3}$ _____

9. Hexagon with radius 8 48

Find the area of each polygon described.

10. A square with perimeter 44 _____

11. A square with apothem 4 64

12. A square with radius 6 _____

13. A regular pentagon with perimeter 60 and apothem x $24\sqrt{7}$

14. A regular 12-sided polygon with side s and apothem a _____

15. A regular hexagon with sides 12 $216\sqrt{3}$

16. A regular hexagon with radius 8 _____

17. An equilateral triangle with radius 6 $27\sqrt{3}$

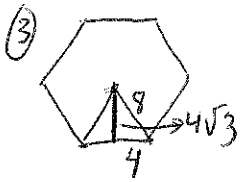
18. An equiangular triangle with perimeter 36 _____

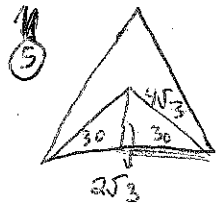
19. An equilateral triangle with apothem 2 $12\sqrt{3}$

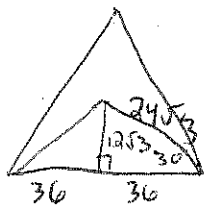
$\tan 36 = \frac{6}{4}$

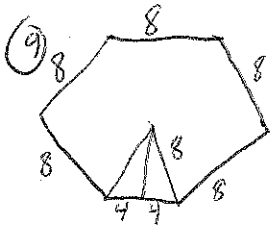
$4 = 8.3$

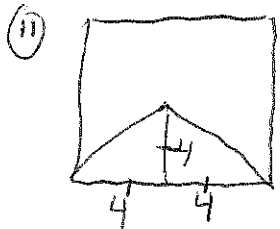
$A = \frac{1}{2}(18.3)1.5$



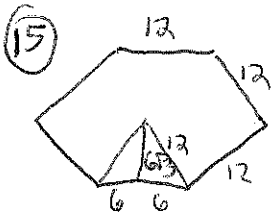


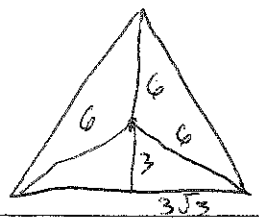


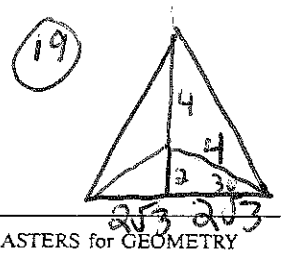




$A = B^2 = 64$





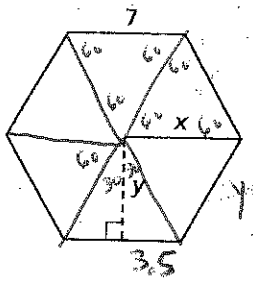


Name _____ Class _____ Date _____

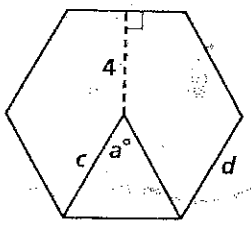
Practice 7-5

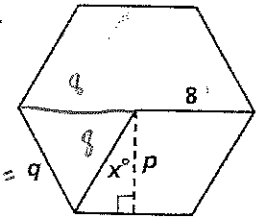
Areas of Regular Polygons

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

1. 

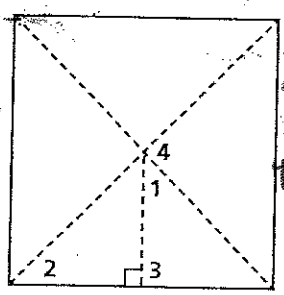
$y = 3.5\sqrt{3}$ $x = 7$

2. 

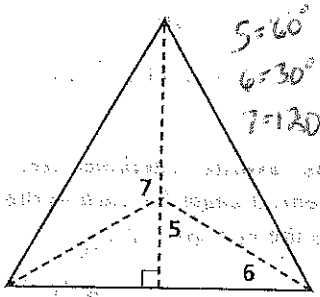
3. 

$8 = q$ $x = 30°$ $p = 4\sqrt{3}$

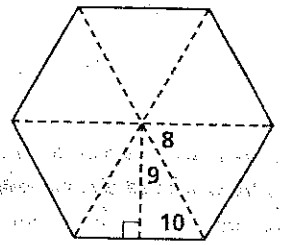
Each regular polygon has radii and an apothem as shown. Find the measure of each numbered angle.

4. 

$1 = 45°$ $2 = 45°$ $3 = 90°$ $4 = 90°$

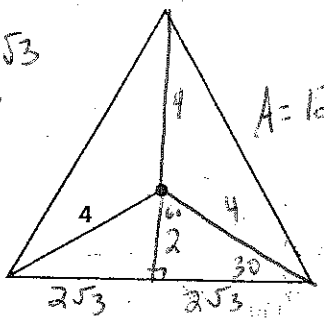
5. 

$5 = 60°$ $6 = 30°$ $7 = 120°$

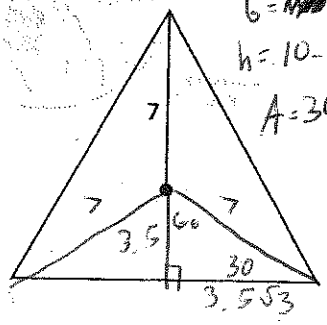
6. 

$8 = 60°$ $10 = 60°$ $9 = 30°$

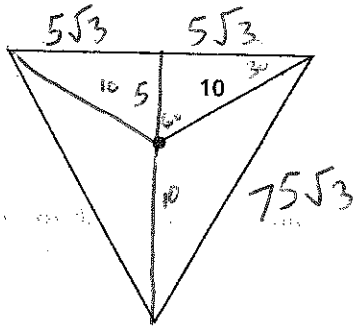
Find the area of each equilateral triangle, given the radius. Leave your answers in simplest radical form.

7. 

$b = 4\sqrt{3}$ $h = 6$ $A = 12\sqrt{3}$

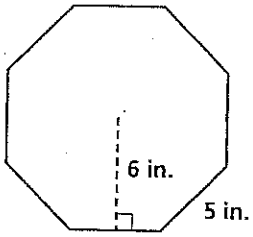
8. 

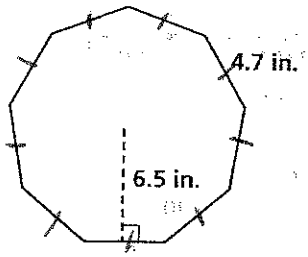
$6 = 7\sqrt{3}$ $h = 10.5$ $A = 36.75\sqrt{3}$

9. 

$75\sqrt{3}$

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

10. 

11. 

$\frac{9(4.7)(6.5)}{2} = 137.475$

12.