

# 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  $B$ .

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

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

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. Square with side 10 \_\_\_\_\_  
 5. Equilateral triangle with radius  $4\sqrt{3}$  \_\_\_\_\_

**Find the radius of each regular polygon.**

6. Square with area 64 \_\_\_\_\_      7. Triangle with apothem  $12\sqrt{3}$  \_\_\_\_\_

**Find the perimeter of each regular polygon.**

8. Triangle with radius  $4\sqrt{3}$  \_\_\_\_\_      9. Hexagon with radius 8 \_\_\_\_\_

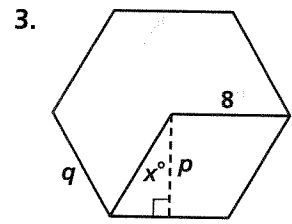
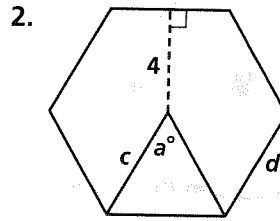
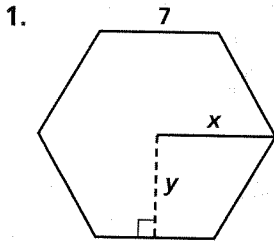
**Find the area of each polygon described.**

10. A square with perimeter 44 \_\_\_\_\_  
 11. A square with apothem 4 \_\_\_\_\_  
 12. A square with radius 6 \_\_\_\_\_  
 13. A regular pentagon with perimeter 60 and apothem  $x$  \_\_\_\_\_  
 14. A regular 12-sided polygon with side  $s$  and apothem  $a$  \_\_\_\_\_  
 15. A regular hexagon with sides 12 \_\_\_\_\_  
 16. A regular hexagon with radius 8 \_\_\_\_\_  
 17. An equilateral triangle with radius 6 \_\_\_\_\_  
 18. An equiangular triangle with perimeter 36 \_\_\_\_\_  
 19. An equilateral triangle with apothem 2 \_\_\_\_\_

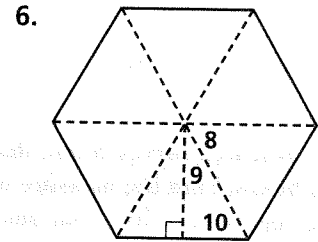
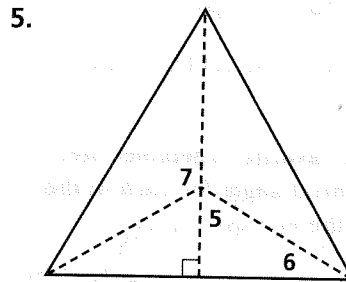
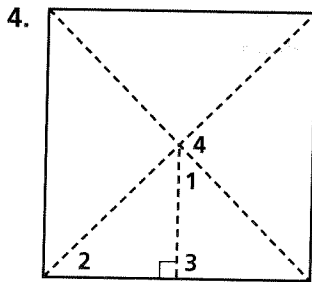
# Practice 7-5

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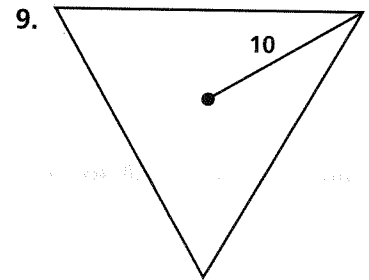
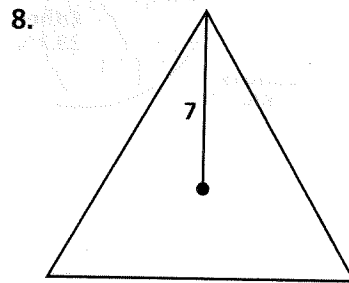
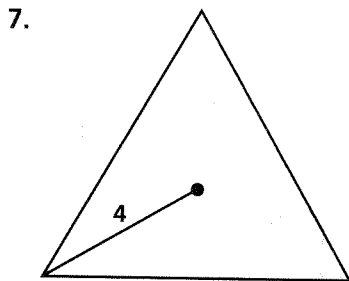
Find the values of the variables for each regular hexagon. Leave your answers in simplest radical form.



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



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



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

