

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 .

- If $\angle AOB$ has the given measure, find the value of n .
 - $m\angle AOB = 45$, $n =$ 8
 - $m\angle AOB = 30$, $n =$ 12
- Find the measure of $\angle AOB$ for the given value of n .
 - $n = 10$, $m\angle AOB =$ 36
 - $n = 15$, $m\angle AOB =$ 24

Find the apothem of each regular polygon.

- Hexagon with radius 8 $4\sqrt{3}$
- Square with side 10 5
- Equilateral triangle with radius $4\sqrt{3}$ $2\sqrt{3}$
- Square with side 10 5

Find the radius of each regular polygon.

- Square with area 64 $4\sqrt{2}$
- Triangle with apothem $12\sqrt{3}$ $24\sqrt{3}$

Find the perimeter of each regular polygon.

- Triangle with radius $4\sqrt{3}$ 36
- Hexagon with radius 8 48

Find the area of each polygon described.

- A square with perimeter 44 121
- A square with apothem 4 64
- A square with radius 6 72
- A regular pentagon with perimeter 60 and apothem x $30x$
- A regular 12-sided polygon with side s and apothem a $6as$
- A regular hexagon with sides 12 $216\sqrt{3}$
- A regular hexagon with radius 8 $96\sqrt{3}$
- An equilateral triangle with radius 6 $27\sqrt{3}$
- An equiangular triangle with perimeter 36 $36\sqrt{3}$
- An equilateral triangle with apothem 2 $12\sqrt{3}$