

Practice on Polygons

SHOW ALL OF YOUR WORK by using the following formulae (along with substitution) and solving ALGEBRAICALLY!

ANGLE MEASURES

$$S = 180^\circ(n - 2)$$

$$m = \frac{180^\circ(n - 2)}{n}$$

where: S = sum of all interior angles

m = measure of one interior angle

n = number of sides

PERIMETER AND AREA

$$P = ns \qquad A = \frac{aP}{2}$$

where: n = number of sides
 s = length of one side

a = apothem

P = perimeter

A = area

1. A regular hexagon has a perimeter of 36 m. Determine the length of one side of the hexagon.
2. How many sides does a regular polygon have if the sum of its interior angles is 1260° ?
3. What is the sum of the interior angles of a regular decagon?

4. Determine the area of a regular hexagon that has a perimeter of 30 cm and an apothem of 4.5 cm.
5. Determine the area of a regular pentagon that has a perimeter of 22 cm and an apothem of 3 cm.
6. Determine the area of a regular hexagon that has a side length of 8 m and an apothem of 7 m.
7. Determine the perimeter of a regular octagon with an apothem of 11 dm and an area of 396 dm^2 .

8. Determine the perimeter of a regular octagon with an area of 130 cm^2 and an apothem of 6.5 cm.
9. Determine the length of one side of a regular octagon which has an area of 154 m^2 and an apothem of 7 m.
10. Determine the perimeter of the regular polygon that has a side that measures 7 dm and whose sum of interior angles is 540° .
11. Determine the area of the regular polygon that has an interior angle measuring 108° , a side measuring 9 m and an apothem that measures 6.5 m.

12. Determine the perimeter of the regular polygon that has an interior angle measuring 144° and a side that measures 5 cm.
13. Determine the area of the regular polygon that has an interior angle measuring 162° , a side measure 7 m and an apothem that measures 5 m.
14. Each of the interior angles of a regular polygon are 156° . How many sides does the regular polygon have?