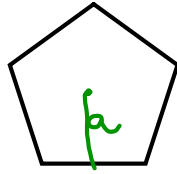


LESSON # 43 ~ Area of a Regular Polygon

Textbook 173 and 174



Apothem ~ the line from the center  
 $a$  to the middle of one side.  
 (not corner)

Side length  $s$

Number of sides  $n$

Formula used to calculate the area :

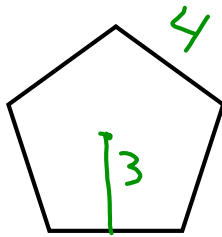
$$A = \frac{s \times a \times n}{2}$$

or

$$\frac{sn}{2} \text{ perimeter} \times \text{apothem}$$

Example 1: Pentagon with side length of 4cm and apothem of 3cm.

$$n = 5$$



$$\begin{aligned} A &= \frac{Pa}{2} \\ &= \frac{(5 \times 4) 3}{2} \\ &= 30 \text{ cm}^2 \end{aligned}$$

Example 2: Find the length of the side of a regular hexagon with the area 48cm<sup>2</sup> and apothem 8cm.

$$A = 48$$

$$a = 8$$

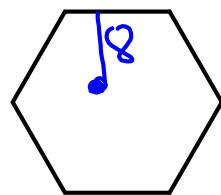
$$n = 6$$

$$A = \frac{S \times a \times n}{2}$$

$$48 = \frac{S \times 8 \times 6}{2}$$

Example 3:  
 Decomposable 2

$$48 = \frac{S \times 48}{2}$$



$$48 = S \times 24$$

$$\frac{48}{24} = S$$

$$2 = S$$

length = 2cm

