

# Areas of Regular Polygons



## Overview of problems



Example Set: A

Find the area of the regular polygon given the following.

$$\begin{aligned} \text{side} &= 5 \\ \text{number of sides} &= 10 \\ \text{apothem} &= 2\sqrt{3} \end{aligned}$$

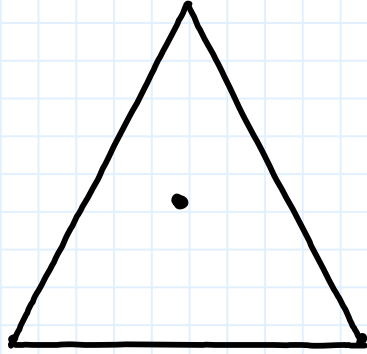
$$\begin{aligned} \text{side} &= 2\sqrt{3} \\ \text{number of sides} &= 8 \\ \text{apothem} &= \sqrt{2} \end{aligned}$$

$$\begin{aligned} \text{side} &= 5x \\ \text{number of sides} &= 6 \\ \text{apothem} &= \frac{3x}{4} \end{aligned}$$

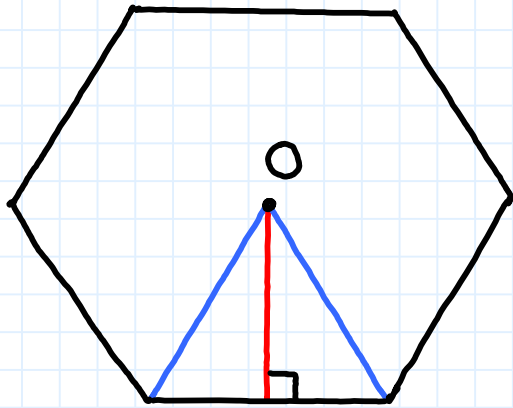


## Example Set: B

Find the area of the regular polygon.



$$\begin{aligned} \text{apothem} &= 3 \\ \text{radius} &= 6 \end{aligned}$$

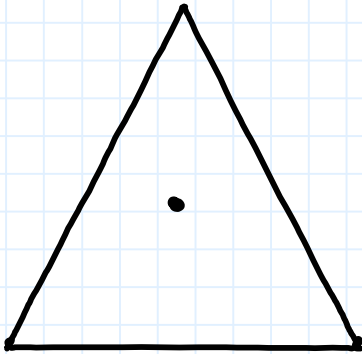


$$\begin{aligned} \text{apothem} &= 6 \\ \text{radius} &= 4\sqrt{3} \end{aligned}$$

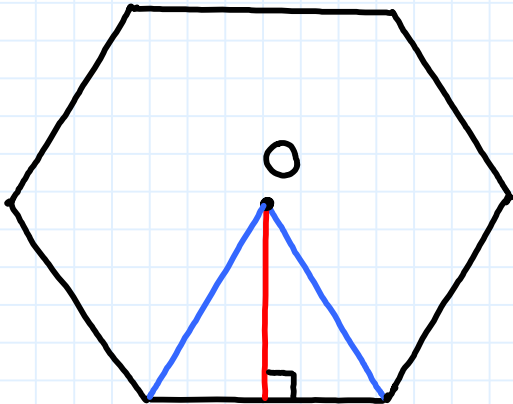


## Example Set: C

Find the area of the regular polygon.



$$\begin{aligned} \text{apothem} &= 3 \\ \text{radius} &= 6 \end{aligned}$$



$$\begin{aligned} \text{apothem} &= 2\sqrt{3} \\ \text{radius} &= 4 \end{aligned}$$

# Areas of Regular Polygons



## Overview of problems- KEY



Example Set: A

Find the area of the regular polygon given the following.

$$\text{side} = 5$$

$$\text{number of sides} = 10$$

$$\text{apothem} = 2\sqrt{3}$$

$$A = 50\sqrt{3}$$

$$\text{side} = 2\sqrt{3}$$

$$\text{number of sides} = 8$$

$$\text{apothem} = \sqrt{2}$$

$$A = 8\sqrt{6}$$

$$\text{side} = 5x$$

$$\text{number of sides} = 6$$

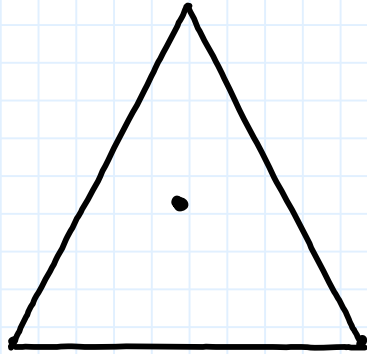
$$\text{apothem} = \frac{3x}{4}$$

$$A = \frac{45x^2}{4}$$



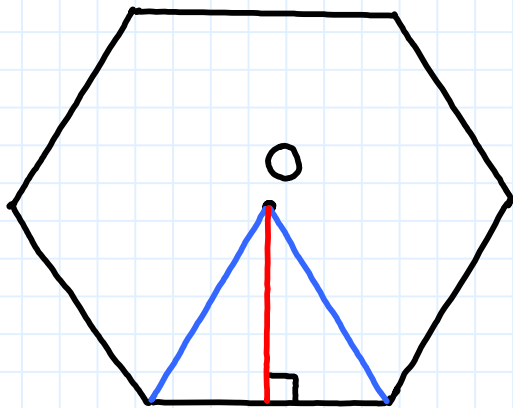
## Example Set: B

Find the area of the regular polygon.



$$\begin{aligned} \text{apothem} &= 3 \\ \text{radius} &= 6 \end{aligned}$$

$$A = 27\sqrt{3}$$



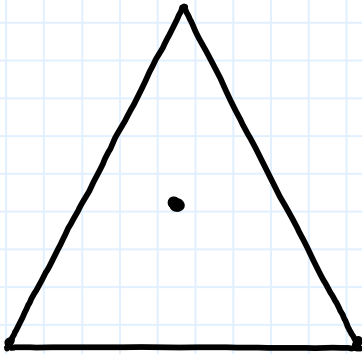
$$\begin{aligned} \text{apothem} &= 6 \\ \text{radius} &= 4\sqrt{3} \end{aligned}$$

$$A = 72\sqrt{3}$$



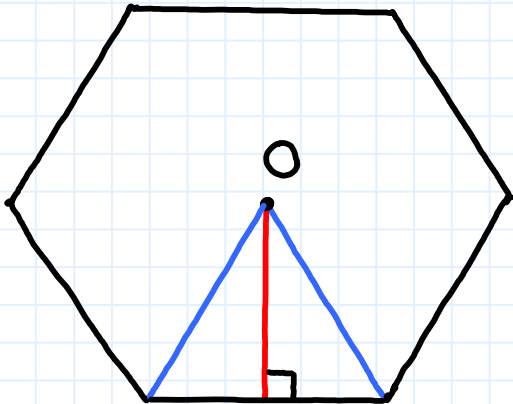
## Example Set: C

Find the area of the regular polygon.



$$\begin{aligned} \text{apothem} &= 3 \\ \text{radius} &= 6 \end{aligned}$$

$$A = 27\sqrt{3}$$



$$\begin{aligned} \text{apothem} &= 2\sqrt{3} \\ \text{radius} &= 4 \end{aligned}$$

$$A = 24\sqrt{3}$$