

# Area of Sectors and Segments of a Circle

Mr. Jonathan R. Bacolod, LPT

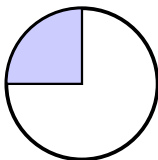
Sauyo High School

September 20, 2019

## Sector of a Circle

**Sector:** a region in the circle bounded by two radii and the minor arc they determine

The **area of a sector** is represented by  $A = \frac{n}{360} \pi r^2$ , where  $n$  is the number of degrees in the central angle of a sector.



## Example

To solve for the area of the shaded region:

$$n = 90^\circ$$

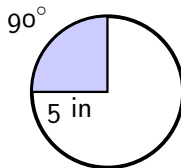
$$r = 5 \text{ in.}$$

$$A = \frac{n}{360} \pi r^2$$

$$A = \frac{90}{360} (\pi)(5^2)$$

$$A = \frac{1}{4} (\pi)(25)$$

$$A = \frac{25}{4} \pi \text{ in}^2$$

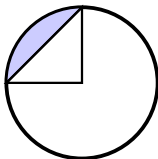


## Segment of a Circle

**Segment:** a region bounded by an arc and the chord of the arc

The **area of a segment** of a circle is found by subtracting the area of a triangle from the area of a sector.

$$A_{\text{segment}} = A_{\text{sector}} - A_{\text{triangle}}$$



## Example

To solve for the area of the shaded region:  
 $n = 90^\circ$ ,  $r = 5$  in.

$$A_{\text{sector}} = \frac{n}{360} \pi r^2$$

$$A_{\text{sector}} = \frac{90}{360} (\pi)(5^2)$$

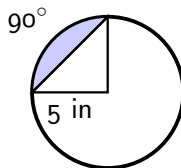
$$A_{\text{sector}} = \frac{1}{4} (\pi)(25)$$

$$A_{\text{sector}} = \frac{25}{4} \pi \text{ in}^2$$

$$A_{\text{triangle}} = \frac{1}{2} bh$$

$$A_{\text{triangle}} = \frac{1}{2} (5)(5)$$

$$A_{\text{triangle}} = \frac{25}{2} \text{ in}^2$$



$$A_{\text{segment}} = A_{\text{sector}} - A_{\text{triangle}}$$

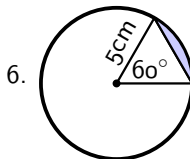
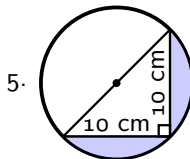
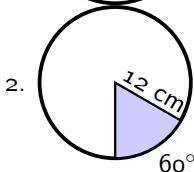
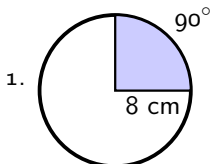
$$A_{\text{segment}} = \frac{25}{4} \pi - \frac{25}{2}$$

$$A_{\text{segment}} = -\frac{25}{2} + \frac{25}{4} \pi \text{ in}^2$$

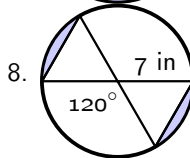
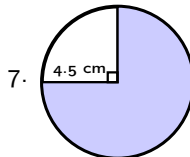
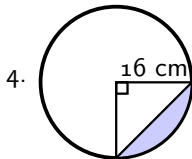
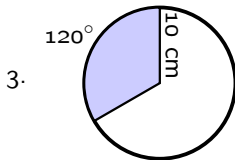
# Practice Exercises

## Practice Exercises

Find the area of each shaded region/s in each figure. Express your answer in terms of  $\pi$ .



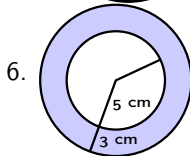
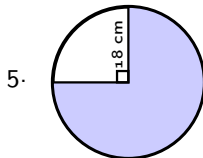
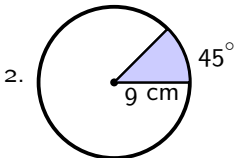
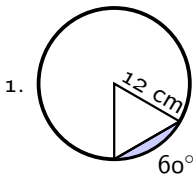
# Practice Exercises



# Problem Set

## Problem Set

Find the area of each shaded region/s in each figure. Express your answer in terms of  $\pi$ .





# Problem Set

