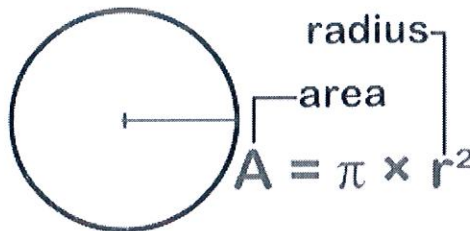


**Geometry**  
**Area of a Sector**

Name: Key  
Date: \_\_\_\_\_

**Review**

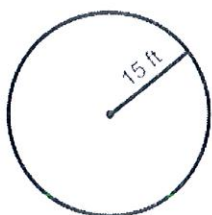
The area of a circle is the number of square units inside the circle.



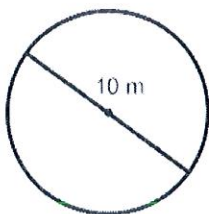
Area of a Circle =  $\pi r^2$

**Examples**

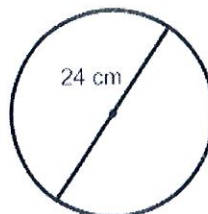
1. Area =  $225\pi \text{ ft}^2$     2. Area =  $25\pi \text{ m}^2$     3. Area =  $144\pi \text{ cm}^2$     4. Area =  $0.625\pi \text{ in}^2$



$\pi(15)^2$



$\pi(5)^2$



$\pi(12)^2$



$\pi(0.25)^2$

5. In terms of  $\pi$ , find the area of a circle whose diameter is 16.

Area =  $\pi(8)^2 = 64\pi \text{ units}^2$      $r = 8$

6. Find the area of a circle whose circumference is  $24\pi$ . Leave your answer in terms of  $\pi$ .

step 1 | Find radius using  $C = 2\pi r$     step 2 | use radius to find area

$\frac{24\pi}{2\pi} = \frac{2\pi r}{2\pi}$      $r = 12$     Area =  $\pi r^2$

$= \pi(12)^2$

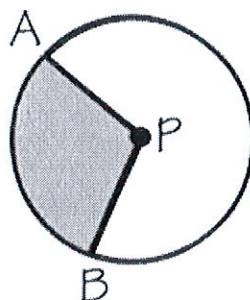
$= 144\pi \text{ units}^2$

**Area of a Sector of a Circle**

A sector is the region bounded by two radii and their intercepted arc.

**Area of a Sector =**

$\frac{\pi r^2 \theta}{360}$



Sector APB is shaded in  $\odot P$ .

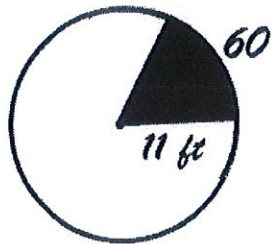
The unshaded region is also a sector.

Examples

Area of sector =  $\frac{\pi r^2 \theta}{360}$

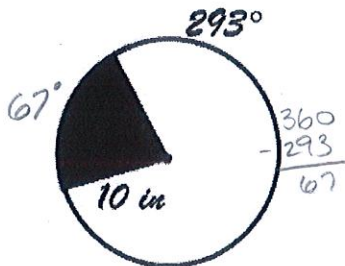
Find the area of the sector of the circle.

1.  $\frac{121\pi}{6} \text{ ft}^2$



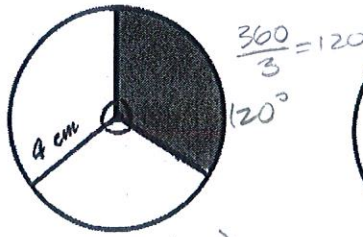
$A = \frac{\pi (11)^2 (60)}{360}$

2.  $\frac{335\pi}{18} \text{ m}^2$



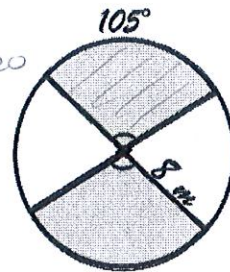
$A = \frac{\pi 10^2 (67)}{360}$

3.  $\frac{16\pi}{3} \text{ cm}^2$



$A = \frac{\pi 4^2 (120)}{360}$

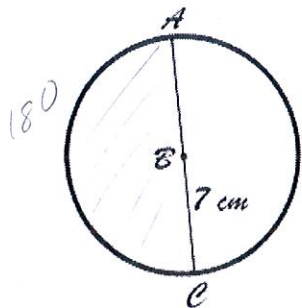
4.  $\frac{112\pi}{3} \text{ m}^2$



$A = \frac{\pi 8^2 (105)}{360}$

$A = \frac{56\pi}{3} (2)$

5. Find the area of sector ABC. Round to the nearest hundredth.



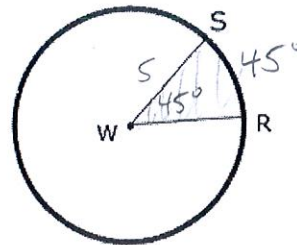
$A = \frac{\pi 7^2 (180)}{360}$

$\approx 76.97 \text{ cm}^2$

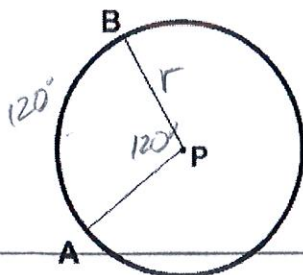
6. S and R are two points on  $\odot W$  with radius 5 m and  $m\angle SWR = 45^\circ$ . Find the area of the sector SWR. Round to the nearest hundredth.

$A = \frac{\pi 5^2 (45)}{360}$

$A \approx 9.82 \text{ m}^2$



7. Find the radius of  $\odot P$  if the area of sector APB is  $108\pi$  square feet and  $m\angle APB = 120^\circ$ .



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

$(360) 108\pi = \frac{\pi r^2 (120)}{360} (360)$

$\frac{38,880\pi}{120\pi} = \frac{\pi r^2 (120)}{\pi \cdot 120}$

$324 = r^2$

$r = 18 \text{ feet}$