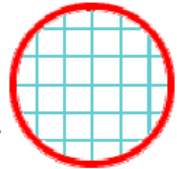


**Quick Check Time!**

# Area and Sector Area

**AREA**  $A = \pi r^2$



The area of a circle is the number of squares that are inside the circle.  
\*the pie filling\*

## EXAMPLES

Find the area of each circle.

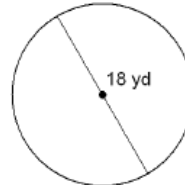
1)



$$A = \pi (5)^2$$

exact  $\rightarrow A = 25\pi \text{ km}^2$   
Approx.  $\rightarrow A = 78.54 \text{ km}^2$

2)



$$\begin{aligned} d &= 2r \\ 18 &= 2r \\ 9 &= r \end{aligned}$$

$$\begin{aligned} A &= \pi (9)^2 \\ A &= 81\pi \text{ yd}^2 \\ A &= 254.47 \text{ yd}^2 \end{aligned}$$

**SECTOR AREA**  $\frac{\text{degree}}{360} (\pi r^2)$

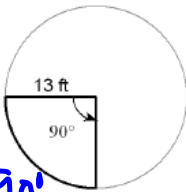
$$\frac{\pi r^2 \theta}{360}$$

Sector area is a fractional portion of the Area of a circle. So the area of a sector is a piece of the total area of a circle.  
 \*a piece (or wedge) of the pie\*

**EXAMPLES**

Find the area of each sector.

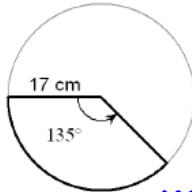
1)



$$= \frac{90}{360} \cdot \pi (13)^2$$

90°  
 exact =  $42.25\pi \text{ ft}^2$   
 Approx =  $132.73 \text{ ft}^2$

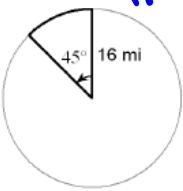
2)



$$\frac{135}{360} \cdot \pi (17)^2$$

135°  
 exact =  $108.375\pi \text{ cm}^2$   
 approx. =  $340.47 \text{ cm}^2$

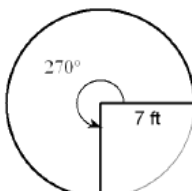
3)



$$\frac{45}{360} \cdot \pi (16)^2$$

45°  
 exact =  $32\pi \text{ mi}^2$   
 Approx =  $100.53 \text{ mi}^2$

4)



$$\frac{270}{360} \cdot \pi (7)^2$$

270°  
 =  $36.75\pi \text{ ft}^2$   
 =  $115.45 \text{ ft}^2$

1. Find the area of a circle with a diameter of 30 cm.

$$d = 30 \quad A = 225\pi \text{ cm}^2$$

$$r = 15 \quad A = 706.86 \text{ cm}^2$$

2. Find the radius of a circle with an area of  $121\pi$  in.

$$A = \pi r^2$$

$$\cancel{121\pi} = \cancel{\pi} r^2$$

$$\sqrt{121} = \sqrt{r^2}$$

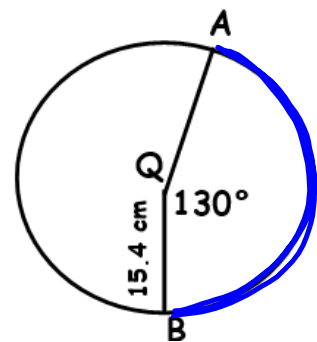
$$11 = r$$

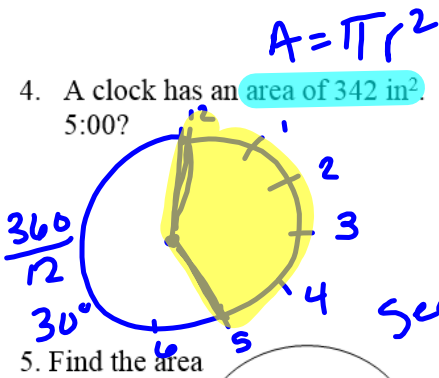
3. Find the area of the sector formed by arc AB.

$$\text{Sector} = \frac{130^\circ}{360} \cdot \pi (15.4)^2$$

$$= 85.64\pi \text{ cm}^2$$

$$= 269.1 \text{ cm}^2$$





$$A = \pi r^2$$

$$\frac{5}{12} (342)$$

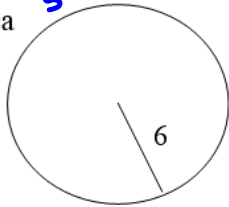
$$\text{Sector} = 142.5 \text{ in}^2$$

B

$$\text{Sector} = \frac{\theta}{360} \cdot \pi r^2$$

$$= \frac{30}{360} \cdot (342)$$

$$\text{Sector} = 142.5 \text{ in}^2$$



$$A = 36\pi$$

$$A = 113.1$$

$$A = \pi r^2$$

$$A = \pi (6)^2$$

6. Find the diameter of a circle with area of 342 square yards.

$$A = \pi r^2$$

$$\frac{342}{\pi} = \frac{\pi (r)^2}{\pi}$$

$$\sqrt{108.86} = \sqrt{r^2}$$

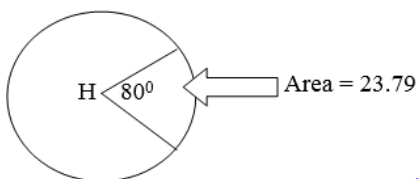
$$10.43 = r$$

$$d = 2r$$

$$d = 2(10.43)$$

$$d = 20.86 \text{ yds}$$

7. Find the area of circle H.



$$\text{Area} = 107.1$$

$$\text{Sector} = \frac{\theta}{360} \cdot \pi r^2$$

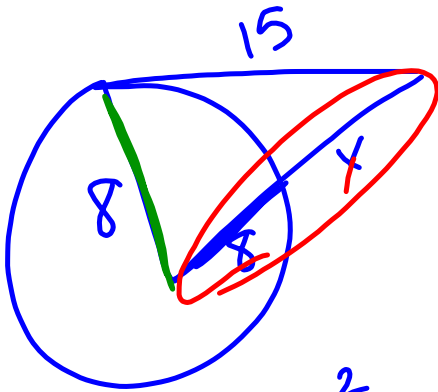
$$23.79 = \frac{80}{360} \cdot \pi r^2$$

$$23.79 = \frac{.22}{.22} \cdot \pi r^2$$

8. A wall clock has an area of 452.4 square inches. What is the area of the sector formed by the hands of the clock with it is 4:00?

9. Three pizzas of given diameters are cut. Which one produces the largest pieces?

- A. 8 inch pizza cut into 6 slices
- B. 12 inch pizza cut into 8 slices
- C. 16 inch pizza cut into 10 slices

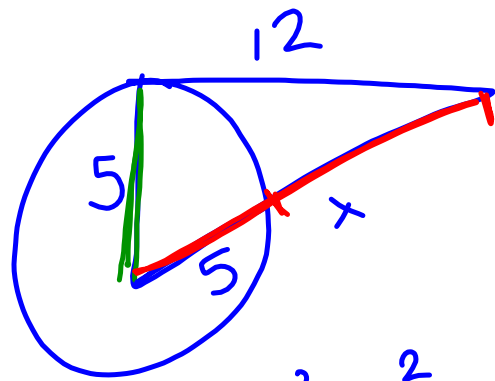


$$8^2 + 15^2 = H^2$$

$$H = 17$$

$$x + 8 = 17$$

$$x = 9$$

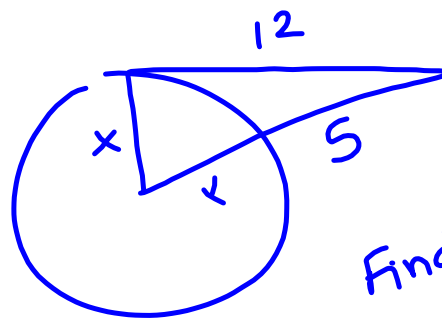


$$5^2 + 12^2 = H^2$$

$$H = 13$$

$$x + 5 = 13$$

$$x = 8$$



Find radius

$$x^2 + 12^2 = (x+5)^2$$



