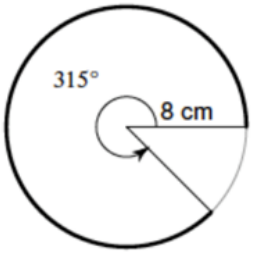
PCFU: Arc Length and Sector Area (F15-F20) Name _____

Find the length of each arc. Do not round.

1)



The arc length is 14π cm.

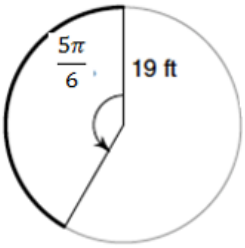
To solve this for the arc length, I set up this proportion:

$$\frac{central\ angle}{360^\circ} = \frac{arc\ length}{circumference}$$

This gave me the equation:
$\frac{315^\circ}{360^\circ} = \frac{x}{2\pi(8)}$, where x represents the arc length.

$$\frac{315^\circ}{360^\circ} = \frac{x}{16\pi}$$
$$360x = 315(16\pi)$$
$$x = \frac{315(16\pi)}{360}$$
$$x = 14\pi\ cm$$

2)



The arc length is $\frac{95\pi}{6}$ ft.

To solve this for the arc length, I set up this proportion:

$$\frac{central\ angle}{2\pi} = \frac{arc\ length}{circumference}$$

This gave me the equation:
$\frac{\frac{5\pi}{6}}{2\pi} = \frac{x}{2\pi(19)}$, where x represents the arc length.

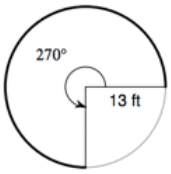
$$\frac{\frac{5\pi}{6}}{2\pi} = \frac{x}{38\pi}$$
$$2\pi x = 38\pi\left(\frac{5\pi}{6}\right)$$
$$x = \frac{38\pi\left(\frac{5\pi}{6}\right)}{2\pi}$$
$$x = 19\left(\frac{5\pi}{6}\right)$$
$$x = \frac{95\pi}{6}\ ft$$

Additonal Practice:

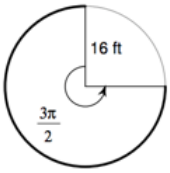
Find the length of each arc. Round your answers to the nearest tenth.

1)

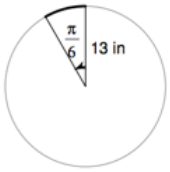
2)



3)

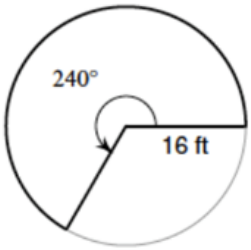


4)



Find the area of each sector. Do not round.

3)



The sector area is $\frac{512\pi}{3}$ ft^2.

To solve this for the arc length, I set up this proportion:

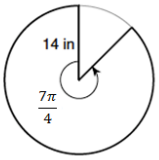
$$\frac{central\ angle}{360^\circ} = \frac{sector\ area}{area\ of\ whole\ circle}$$

This gave me the equation:
$\frac{240^\circ}{360^\circ} = \frac{x}{\pi(16)^2}$, where x represents the sector area.

$$\frac{240^\circ}{360^\circ} = \frac{x}{256\pi}$$
$$360x = 240(256\pi)$$
$$x = \frac{240(256\pi)}{360}$$
$$x = \frac{512\pi}{3}\ ft^2$$

4)

The sector area is $\frac{343\pi}{2}$in^2.



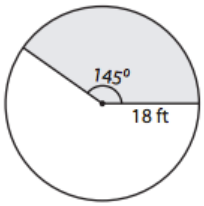
To solve this for the arc length, I set up this proportion:

$$\frac{central\ angle}{2\pi} = \frac{sector\ area}{area\ of\ whole\ circle}$$

This gave me the equation: $\frac{\frac{7\pi}{4}}{2\pi} = \frac{x}{\pi(14)^2}$, where x represents the sector area.

$$\frac{\frac{7\pi}{4}}{2\pi} = \frac{x}{\pi(14)^2}$$
$$\frac{\frac{7\pi}{4}}{2\pi} = \frac{x}{196\pi}$$
$$2\pi x = 196\pi\left(\frac{7\pi}{4}\right)$$
$$x = \frac{196\pi\left(\frac{7\pi}{4}\right)}{2\pi}$$
$$x = 98\left(\frac{7\pi}{4}\right)$$
$$x = \frac{343\pi}{2}in^2$$

5) Find the area of the shaded sector.



The sector area is $\frac{261\pi}{2}$ft^2.

To solve this for the arc length, I set up this proportion:

$$\frac{central\ angle}{360^\circ} = \frac{sector\ area}{area\ of\ whole\ circle}$$

This gave me the equation: $\frac{145^\circ}{360^\circ} = \frac{x}{\pi(18)^2}$, where x represents the sector area.

$$\frac{145^\circ}{360^\circ} = \frac{x}{324\pi}$$
$$360x = 145(324\pi)$$
$$x = \frac{145(324\pi)}{360}$$
$$x = \frac{261\pi}{2}ft^2$$

6) A pumpkin pie is made in a pie pan measuring 10 inches in diameter. It is cut into 4 equal slices. What is the area of 1 piece of pie?

The sector area is $\frac{25\pi}{4}$in^2.

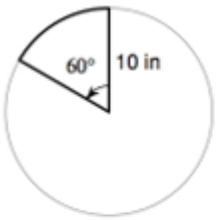
To solve this for sector area I set up a proportion using $\frac{part}{whole} = \frac{sector\ area}{area\ of\ whole\ circle}$. To solve this for sector area I found the radius of the pie by dividing the diameter by two, meaning $r = 5$. This gave me the equation: $\frac{1}{4} = \frac{x}{\pi(5)^2}$, where x represents the sector area.

$$\frac{1}{4} = \frac{x}{25\pi}$$
$$4x = 25\pi$$
$$x = \frac{25\pi}{4}in^2$$

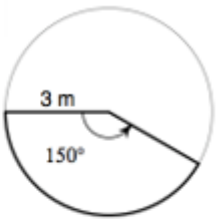
Additional Practice:

Find the area of each sector. Round your answers to the nearest tenth.

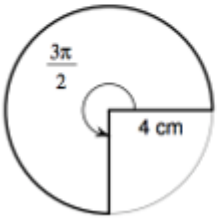
5)



6)



7)



8)