Let $\theta$ (theta) represent the central angle of a circle. The sector of a circle is the partial area of the circle that contains the central angle and its arc.


The arc length of a circle represents part of the circumference of the circle.

The area of the sector represents part of the area of the circle.

$$
\text { Arc Length }=\frac{\theta^{\circ}}{360^{\circ}} 2 \pi r
$$

Sector Area $=\frac{\theta^{\circ}}{360^{\circ}} \pi r^{2}$

For \#1-3, the central angle and either the radius are given. How do we show the process for finding the arc length and sector area of each shaded region using proper units?


$$
\begin{aligned}
& \text { Arc Length } \\
& \frac{210}{360} \cdot 2 \cdot \pi \cdot 12 \\
& =14 \pi \mathrm{in} \\
& \approx 43.98 \mathrm{in}
\end{aligned}
$$

Sector Area

$$
\begin{aligned}
& \frac{210}{360} \cdot \pi \cdot 12^{2} \\
& =84 \pi \mathrm{in}^{2} \\
& \approx 263.89 \mathrm{in}^{2}
\end{aligned}
$$

$$
\frac{90}{360} \cdot \pi \cdot 6^{2}
$$

$$
=9 \pi \mathrm{~cm}^{2}
$$

3

$$
\begin{aligned}
& \frac{90}{360} \cdot 2 \cdot \pi \cdot 6 \\
& =3 \pi \mathrm{~cm}
\end{aligned}
$$

$$
\approx 28.27 \mathrm{~cm}^{2}
$$



$$
\begin{aligned}
& \frac{240}{360} \cdot 2 \cdot \pi \cdot 19 \\
&=\frac{76 \pi \mathrm{~m}}{3} \\
& \approx 79.59 \mathrm{~m}
\end{aligned}
$$

$$
\frac{240}{360} \cdot \pi \cdot 192
$$

$$
\begin{aligned}
& =\frac{722 \pi}{3} \mathrm{~m}^{2} \\
& \approx 756.08 \mathrm{~m}^{2}
\end{aligned}
$$

For \#4-9, find the requested measure. Make sure to use appropriate units.


