## Answer on Question \#77227 - Math - Geometry

## Question

For the circle of radius 9 feet, find the arc length $s$ cut off by a central angle of 6 degrees.

## Solution



Let $s$ represent the arc length, $\theta$ represent the central angle in radians and $r$ be the radius of the circle. Then a central angle of $\theta$ radians in a circle of radius $r$ subtends an arc of length

$$
s=r \theta
$$

We must express $6^{\circ}$ in radians

$$
\begin{aligned}
& 180^{\circ}-\pi \mathrm{rad} \\
& 6^{\circ}-\theta \mathrm{rad}
\end{aligned}
$$

Then

$$
\theta=\frac{6}{180} \cdot \pi=\frac{\pi}{30}
$$

The arc length $s$ cut off by a central angle of 6 degrees

$$
s=9 f t\left(\frac{\pi}{30}\right)=\frac{3 \pi}{10} f t
$$

Answer: $s=\frac{3 \pi}{10} f t$.

