Arc Length & Sector Area

Degrees: Arc Length

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

Radians

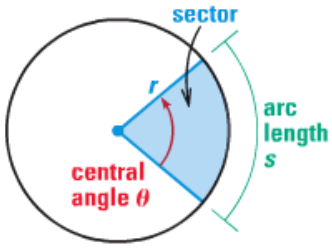
$\frac{\theta}{360} \cdot 2\pi r = \frac{\theta}{2\pi} \cdot 2\pi r = \theta r$

Degrees : Sector Area

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

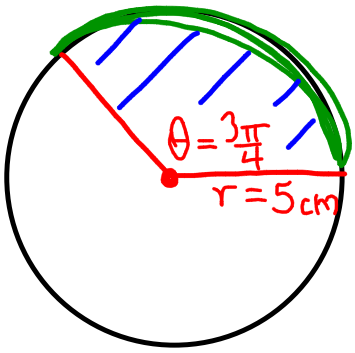
$\frac{\theta}{360} \cdot \pi r^2 = \frac{\theta}{2\pi} \cdot \pi r^2$

$= \frac{1}{2}\theta r^2$



The arc length s and area A of a sector with radius r and central angle θ (measured in radians) are as follows.

$s = \theta r$ $\quad A = \frac{1}{2}\theta r^2$



$s = \frac{3\pi}{4} \cdot 5$

$= \frac{15\pi}{4}$ cm

$= 11.8$ cm

$A = \frac{1}{2}\left(\frac{3\pi}{4}\right)(5)^2$

$= \frac{75\pi}{8}$ cm^2

$= 29.4$ cm^2