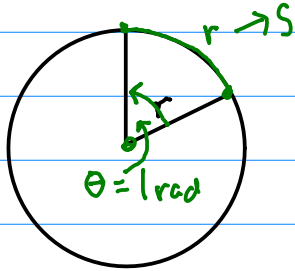


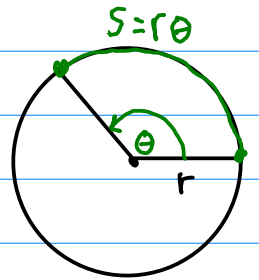
## Converting Between Degrees and Radians

What is a radian?



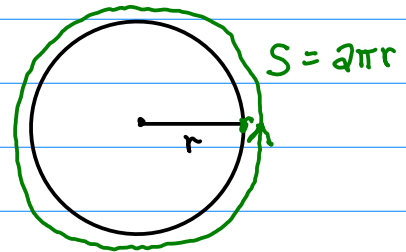
Radians and degrees:

Formula:  $S = r\theta$



$\theta \rightarrow 1 \text{ rad: } S = r, S = r\theta$   
 $\Rightarrow r = r\theta \Rightarrow \theta = 1$

Whole circle:  $C = 2\pi r, C = S$



$S = 2\pi r, \text{ also } S = r\theta$   
 $\Rightarrow 2\pi r = r\theta$   
 $\Rightarrow \theta = 2\pi$

Degrees:  $\theta = 360^\circ$

$\Rightarrow 2\pi \text{ rad} = 360^\circ$   
 $\Rightarrow \pi \text{ rad} = 180^\circ$

Convert deg. to rad:  $\times \frac{\pi}{180}$   
" rad to deg:  $\times \frac{180}{\pi}$

eg  $\frac{3\pi}{4} \text{ rad} = \frac{3\pi}{4} \times \frac{180}{\pi} = 135^\circ$

eg  $40^\circ = 40 \cdot \frac{\pi}{180} = \frac{2\pi}{9}$