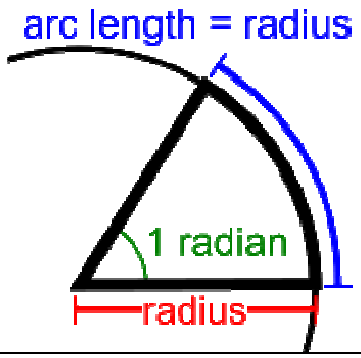
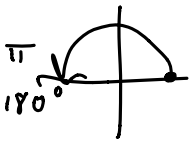
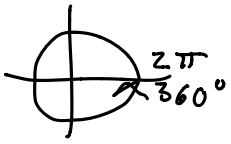
Chapter 4 Trigonometric Functions
4.1 Degree & Radian Measure:

Units of Measurement:
Degrees – A planar unit of angular measure equal in magnitude to $^1/_{360}$ of a complete revolution.

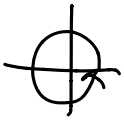
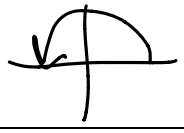
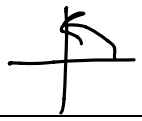
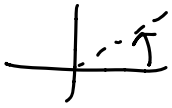
Radian -- One radian is the angle subtended at the center of a circle by an arc of length equal to the radius of the circle.







CONVERTING Degrees into Radians:

360° 	2π
180° 	π
90° 	$\frac{\pi}{2}$
45° 	$\frac{\pi}{4}$
30° 	$\frac{\pi}{6}$

Formula: Degrees * $\frac{\pi}{180^\circ}$ = Radians

Formula: Radians * $\frac{180}{\pi}$ = Degrees

$\pi = 180^\circ$

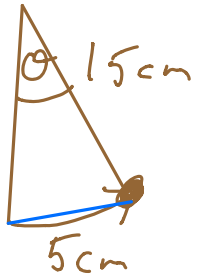
Examples:

Convert into Radians	Convert into Degrees
$75^\circ \rightarrow 75^\circ \cdot \frac{\pi}{180^\circ} = \frac{5\pi}{12}$	$\frac{\pi}{3} = 60^\circ$
$150^\circ \rightarrow \frac{5\pi}{6}$	$\frac{\pi}{4} = 45^\circ$
$390^\circ \rightarrow \frac{13\pi}{6}$ $\left[2\pi + \frac{\pi}{6}\right]$	$\frac{\pi}{6} = 30^\circ$

Formula: Arc Length = Radius * Angle (IN RADIANS!) $a = r\theta$

↳ ONLY!!

A heavy mass is attached to a string that is 15 cm in length. It sweeps out an arc of 5 cm. What is the measure of the angle swept out in radians?



$\frac{a}{\uparrow} = \frac{r\theta}{\uparrow \quad ?}$

$5 = 15\theta$

$\frac{5}{15} = \theta$

$\frac{1}{3} = \theta$

in degrees: $\frac{1}{3} \cdot \frac{180}{\pi} \approx 19.1^\circ$