Radians

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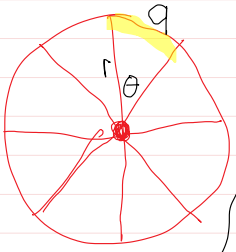

In radians

$a = r\theta$

In degrees

α = central angle in degrees

$$a = \frac{2\pi r \alpha}{360}$$

θ = 1 full revolution in radians

a = circumference $= 2\pi r$

$2\pi r = r\theta$

θ = 1 rev $= 2\pi$ radians

2π rad = 1 rev = 360°

$\div 2$ π rad = $\frac{1}{2}$ rev = 180°

$\div 2$ $\frac{\pi}{2}$ rad = $\frac{1}{4}$ rev = 90°.

Why radians? formulas will be simpler

Eg $a = r\theta$ vs $a = \frac{2\pi r \alpha}{360}$!

Recall π rad = 180°

Example convert 2rad to degees.

$\div \pi$ 1 rad = $\left(\frac{180}{\pi}\right)^\circ$

$\times 2$ 2 rad = $\left(\frac{360}{\pi}\right)^\circ$ ✓

Example convert 120° to radians.

π rad = 180°

$\div 180$ $\frac{\pi}{180}$ rad = 1°

x 120

$\frac{120\pi}{180}$ rad $= 120^\circ$

$\frac{2\pi}{3} = \frac{6 \times 2\pi}{6 \times 3}$ rad $= 120^\circ$