

1) Convert 60° into radians

$$\frac{60^\circ}{1} \cdot \frac{2\pi}{360^\circ} = \left(\frac{\pi}{3}\right)$$

2) Convert 90° into revolutions

$$\frac{90^\circ}{1} \cdot \frac{1 \text{ rev}}{360^\circ} = \left(\frac{1}{4} \text{ rev}\right)$$

3) Convert $\pi/8$ radians into degrees

$$\frac{\pi}{8} \cdot \frac{180^\circ}{\pi} = \frac{90^\circ}{8} = \frac{45^\circ}{4} = \left(\frac{11.25^\circ}{1} \right) 22.5$$

4) Convert $\pi/3$ radians into revolutions

$$\frac{\pi}{3} \cdot \frac{1 \text{ rev}}{2\pi} = \left(\frac{1}{6} \text{ rev}\right)$$

5) Convert 1.5 revolutions into degrees

$$\frac{1.5 \text{ rev}}{1} \cdot \frac{360^\circ}{1 \text{ rev}} = \left(540^\circ\right)$$

6) Convert 2.5 revolutions into radians

$$\frac{2.5 \text{ rev}}{1} \cdot \frac{2\pi}{1 \text{ rev}} = \left(5\pi\right)$$

7) Determine Velocity if $r = 4$ meters and $\omega = \pi/2$ rad/sec

$$V = r\omega = (4\text{m})\left(\frac{\pi}{2}\right) = \left(2\pi \text{ m/s}\right)$$

8) A 10 tooth gear is rotating at 50 RPM. It drives a 50 tooth gear. The 50 tooth gear is turning at what angular velocity?

$$\omega = \frac{50 \text{ RPM}}{1 \text{ min}} \cdot \frac{10}{50} = 10 \frac{\text{rev}}{\text{min}} = \left(10 \text{ RPM}\right)$$