

1. Find the linear speed v of the tip of the hour hand of a clock, if the hand is 8 cm long.

$$v = \omega r = \left(\frac{\pi}{6}\right)(8) = \frac{8\pi}{6} = \boxed{\frac{4\pi}{3} \text{ cm per hour}}$$

$$\omega = \frac{\theta}{t} = \frac{2\pi \text{ rad}}{12 \text{ hrs}} = \frac{\pi}{6} \text{ rad per hour}$$

2. The tires of a bicycle have radius 12.0 in. and are turning at the rate of 150 revolutions per min. How fast is the bicycle traveling in miles per hour? (Note: 1 mile = 5280 feet.)

$$v = \omega r = (300\pi)(12) = 3600\pi \text{ in. per min}$$

$$\omega = \frac{150 \text{ rev}}{1 \text{ min}} \times \frac{2\pi \text{ rad.}}{1 \text{ rev.}} = 300\pi \text{ rad per min}$$

$$\approx \boxed{10.7 \text{ mph}}$$

$$\frac{3600\pi \text{ in.}}{1 \text{ min.}} \times \frac{60 \text{ min.}}{1 \text{ hr}} \times \frac{1 \text{ ft.}}{12 \text{ in.}} \times \frac{1 \text{ miles}}{5280 \text{ ft}}$$

Q: What word starts with "e" and has only one letter in it?