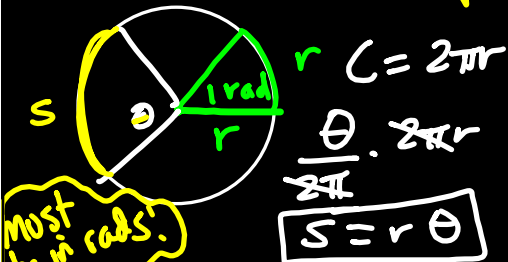
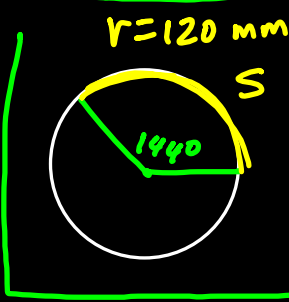


# ARC LENGTH

ft  
mi



# Deg-Rad

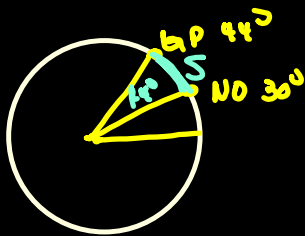


$$s = r\theta$$

$$s = 120 \cdot \frac{144^\circ \pi}{180}$$

$$s \approx 302 \text{ mm}$$

Grand Portage, MN  $44^\circ \text{ N}$   
 New Orleans, LA  $30^\circ \text{ N}$   
 Distance between cities?



$r = 6400 \text{ Km}$

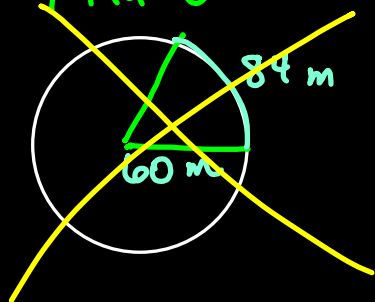
$$s = r\theta$$

$$s = (6400) \left( \frac{14\pi}{180} \right)$$

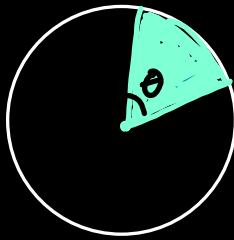
$$\approx 1564$$

$$\approx \boxed{1600 \text{ Km}}$$

Find  $\theta$ .



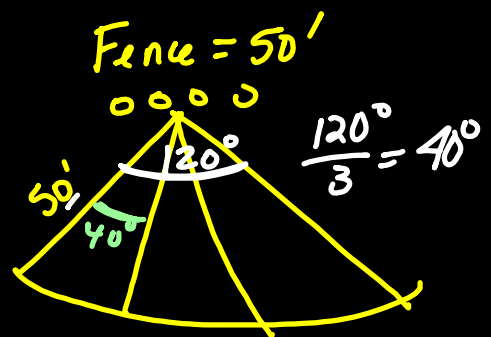
# AREA OF SECTOR



ft<sup>2</sup>  
cm<sup>2</sup>

$$A = \pi r^2 \cdot \frac{\theta}{2\pi}$$

$$A = \frac{1}{2} \theta r^2$$



Area of one part

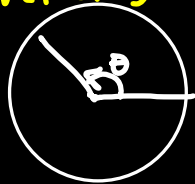
$$A = \frac{1}{2} \theta r^2 = \frac{1}{2} \cdot \frac{40\pi}{180} \cdot 50^2$$

$$= 873$$

$$\approx 870 \text{ ft.}$$

# ANGULAR + LINEAR VELOCITY

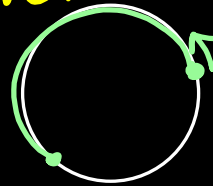
Angular Velocity



how fast center  $\angle$  moves

$$\omega = \frac{\theta}{t} \quad \frac{\text{rad}}{\text{min}}, \frac{\text{rad}}{\text{hr}}$$

Linear Vel.

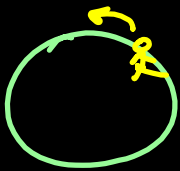


How fast is pt. on edge moving?

$$v = \frac{s}{t} = \frac{r\theta}{t} = r \cdot \omega$$

A merry-go-round has 6' radius & is turning at 10  $\frac{\text{rev}}{\text{min}}$ . How fast is a child on the edge moving in  $\frac{\text{ft}}{\text{sec}}$ ?

$$V = \frac{s}{t} = r \frac{\theta}{t} = r \omega$$

$$= \frac{6 \cdot (10 \cdot 2\pi)}{60} = 6.28 \frac{\text{ft}}{\text{s}} \quad | \text{ 1 rev} = 2\pi$$


Top spinning at 85  $\frac{\text{rev}}{\text{sec}}$ . What is its angular velocity?

$$\omega = \frac{\theta}{t} = \frac{85 \cdot 2\pi}{1} = 170\pi \frac{\text{rad}}{\text{sec}}$$

$$533.8 \frac{\text{rad}}{\text{sec}}$$

