

$$D \rightarrow R \text{ is } \frac{\pi}{180}$$

$$54) 83.7 \cdot \frac{\pi}{180}$$

$$R \rightarrow D \text{ is } \frac{180}{\pi}$$

$$90^\circ \Rightarrow 450^\circ \times \frac{\pi}{180}$$

$$\frac{\pi}{2} \rightarrow \frac{5\pi}{2} \leftarrow$$

$$-\frac{7\pi}{4} + 2\pi =$$

$$-\frac{7\pi}{4} + \frac{8\pi}{4} = \frac{1\pi}{4}$$

$$-\frac{7\pi}{4} - \frac{8\pi}{4} = \frac{-15\pi}{4}$$

D° M' S''

30° 10' 45''

$$60' = 1^\circ$$

$$60'' = 1'$$

30° 10' 45''

$$\downarrow 45/60 = .75$$

30° 10.75'

$$\downarrow \frac{10.75}{60} =$$

30.18°

45.8357°

45° 50.142'

45° 50' 8.52''

Linear and Angular Speed

Finding Arc Length

$$S = r\theta$$

$$\theta = \frac{4\pi}{3}$$

$$= 240^\circ$$

$$r = 4 \text{ inches}$$

$$4 \cdot \frac{4\pi}{3} = \frac{16\pi}{3}$$

$$= 16.76 \text{ in}$$

$$d = 2\frac{1}{2} \text{ in}$$

$$r = 1\frac{1}{4} \text{ in} = \frac{5}{4} \text{ in}$$

$$90^\circ = \frac{\pi}{2}$$

$$S = r \theta$$

$$= \frac{5}{4} \cdot \frac{\pi}{2} = \frac{5\pi}{8}$$

$$= 1.96 \text{ in}$$

$$d = 16 \text{ in}$$

$$r = 8 \text{ in}$$

$$\theta = 6\pi$$

$$s = r\theta$$

$$= 8 \cdot 6\pi = 48\pi$$

$$= 150.8 \text{ in}$$

$$d = 18 \text{ in}$$

$$r = 9 \text{ in}$$

$$\theta = 6\pi$$

$$s = r\theta$$

$$= 9 \cdot 6\pi = 54\pi$$

$$= 169.65 \text{ in}$$

Linear speed

$$Ls = \frac{\text{Arc Length}}{\text{time}}$$

Angular speed

$$As = \frac{\text{Central Angle}}{\text{time}}$$

Linear speed

10.2 cm long

60 sec

$$\theta = 2\pi$$

$$A_L = 10.2 \cdot 2\pi = 64.09$$

$$L_s = \frac{A_L}{\text{time}} = \frac{64.09}{60} = 1.07 \text{ cm/sec}$$

Angular Speed

$$A_s = \frac{\theta}{\text{time}}$$

$$\frac{2\pi}{60} = .105 \text{ r/sec}$$

$$d = 16 \text{ in}$$

→

$$d = 18 \text{ in}$$

$$65 \text{ mph}$$

$$L_s = 65 \text{ mph}$$

$$r = 8 \text{ in}$$

$$t = 1 \text{ hr}$$

$$\theta = 514800$$

$$L_s = \frac{AL}{T} = \frac{r\theta}{T}$$

$$65 = \frac{8 \text{ in } \theta}{1}$$

$$\frac{4118400}{8} = \frac{8 \text{ in } \theta}{8}$$

$$514800 = \theta$$

$$L_s = \frac{r\theta}{t} = \frac{9(514800)}{1 \text{ hr}}$$

$$L_s =$$

$$L_s = 4633200 \text{ in/hr}$$

$$r = 9 \text{ in}$$

$$t = 1 \text{ hr}$$

$$L_s = 73.125 \text{ mph}$$

$$\theta = 514800$$

Homework
pg. 258
#95-98