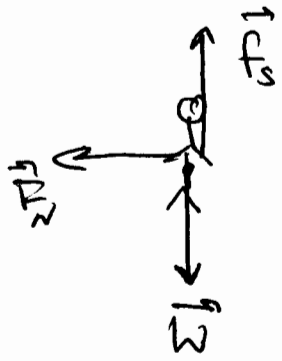
PROB

A.




$\vec{F}_c$ IS DIRECTED TOWARD CENTER OF CIRCLE AND ITS SOURCE IS $\vec{F}_N$.

B. THE FRICTIONAL FORCE $\vec{f}_s$

8.0 rad/s CORRESPONDS TO

$$8.0\frac{\text{rad}}{\text{s}} \times \frac{1\text{ REV}}{2\pi\text{ rad}} = 1.27\text{ REV/s}$$

$$v = \frac{2\pi R}{T} = \frac{(2\pi)(15\text{m})}{\text{REV}}\left(1.27\frac{\text{REV}}{\text{s}}\right)$$

$$= 120\text{ m/s}$$

$$F_c = \frac{mv^2}{r} = \frac{(58\text{kg})(120\text{m/s})^2}{(15\text{m})}$$

$$\boxed{F_c = 5.57\times10^4\text{ N}}$$

C.

$$W = mg = (58\text{kg})(9.8\text{m/s}^2) = 568\text{ N}$$

$$f_s = \mu_s F_N = \mu_s F_c = \mu_s (5.57\times10^4\text{N})$$

AND $W = f_s$

$$\therefore \mu_s = \frac{mg}{F_N} = \frac{568\text{ N}}{5.57\times10^4\text{ N}}$$

$$\mu_s = 0.0102$$