

63. (a) The distance traveled in one revolution is $2\pi R = 2\pi(4.6) = 29$ m. The (constant) speed is consequently $v = 29/30 = 0.96$ m/s.
- (b) Newton's second law (using Eq. 6-17 for the magnitude of the acceleration) leads to

$$f_s = m \left(\frac{v^2}{R} \right) = m(0.20)$$

in SI units. Noting that $N = mg$ in this situation, the maximum possible static friction is $f_{s,\max} = \mu_s mg$ using Eq. 6-1. Equating this with $f_s = m(0.20)$ we find the mass m cancels and we obtain $\mu_s = 0.20/9.8 = 0.021$.