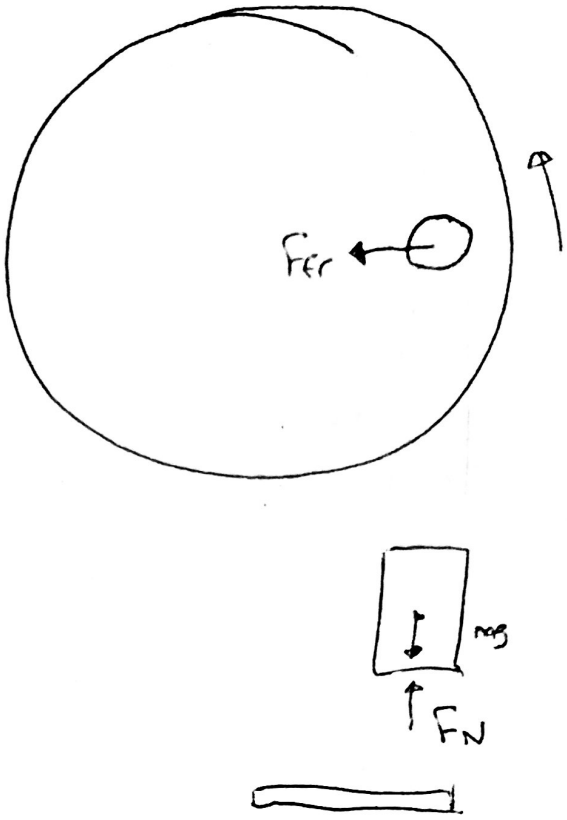

$F_N = mg$

$F_{fr} = \mu_s F_N = \mu_s mg$

kinematics

uniform circular motion:

$$a = \frac{v^2}{r}$$

$$\mu_s mg = ma = m\frac{v^2}{r}$$

$$\mu_s g = \frac{v^2}{r}$$

$$v = \sqrt{\mu_s g r}$$