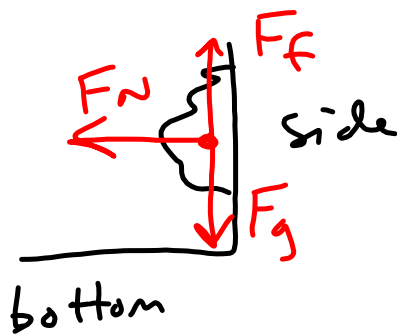


# CIRCULAR MOTION

• Scenario	Force causing circular motion
Flying pig	tension
electron "orbiting" nucleus	electric
Moon orbiting the earth	gravitational
clothes in washer	normal



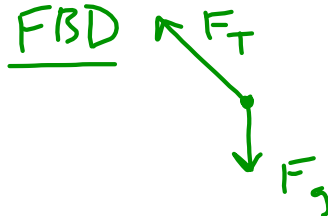
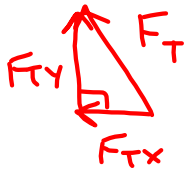
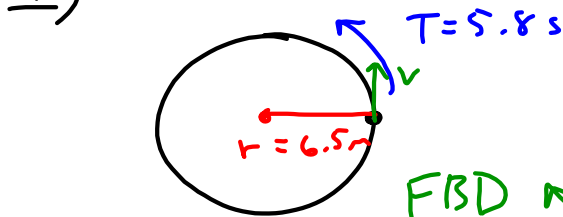
- Times

- Period ( $T$ ) → time it takes for an object to complete one revolution
- Frequency ( $f$ ) → set amount of time during which an object rotates

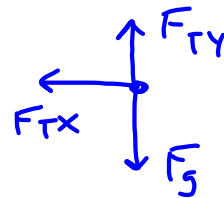
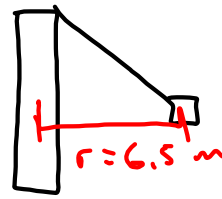
$$T = \frac{1}{f}$$

# CIRCULAR MOTION PROBLEMS

1) TOP VIEW



SIDE VIEW

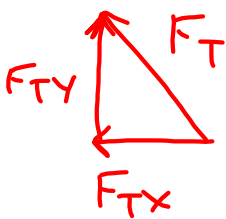


$$a) \quad v = \frac{2\pi r}{T} = \frac{2\pi(6.5\text{m})}{5.8\text{s}} = 7.04\text{m/s}$$

$$b) \quad a_c = \frac{v^2}{r} = \frac{(7.04\text{m/s})^2}{6.5\text{m}} = 7.62\text{m/s}^2$$

$$c) \quad F_c = m a_c$$

$$F_{TX} = m a_c = (80\text{kg})(7.62\text{m/s}^2) = 610\text{N}$$



$$\begin{aligned} F_{TY} &= F_g = m a_g \\ &= (80\text{kg})(9.8\text{m/s}^2) \\ &= 784\text{N} \end{aligned}$$

$$\begin{aligned} F_T &= \sqrt{F_{TX}^2 + F_{TY}^2} \\ &= \sqrt{(610\text{N})^2 + (784\text{N})^2} \\ &= 993\text{N} \end{aligned}$$