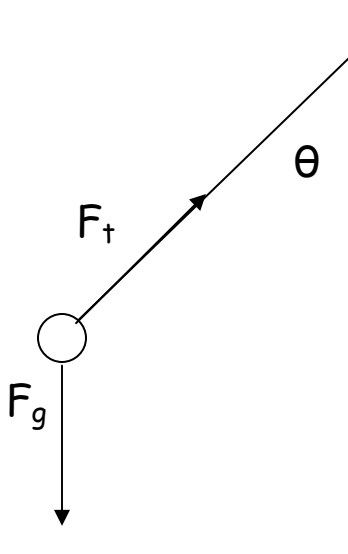


Physics 12 Section 5.2 Continued
The Tether Ball and the Car Rounding a Corner

1. There are two forces acting on a tether ball as it rotates in uniform circular motion.



2. The force of tension acts along the rope while the weight acts straight down. The force of tension provides the center seeking force and is the horizontal component of the F_t .

$$F_t \sin \theta = F_h$$

3. The vertical component of the F_t is equal to the weight of the object.

$$F_t \cos \theta = F_g$$

4. The sum of the forces statement for the x direction is:

$$\begin{aligned}\Sigma F_c &= mv^2/r \\ F_t \sin \theta &= mv^2/r\end{aligned}$$

5. The sum of the forces statement for the y direction is:

$$\begin{aligned}\Sigma F_y &= ma \\ F_t \cos \theta - mg &= 0\end{aligned}$$