# Particle F=ma (n-t):  Example Problem 4
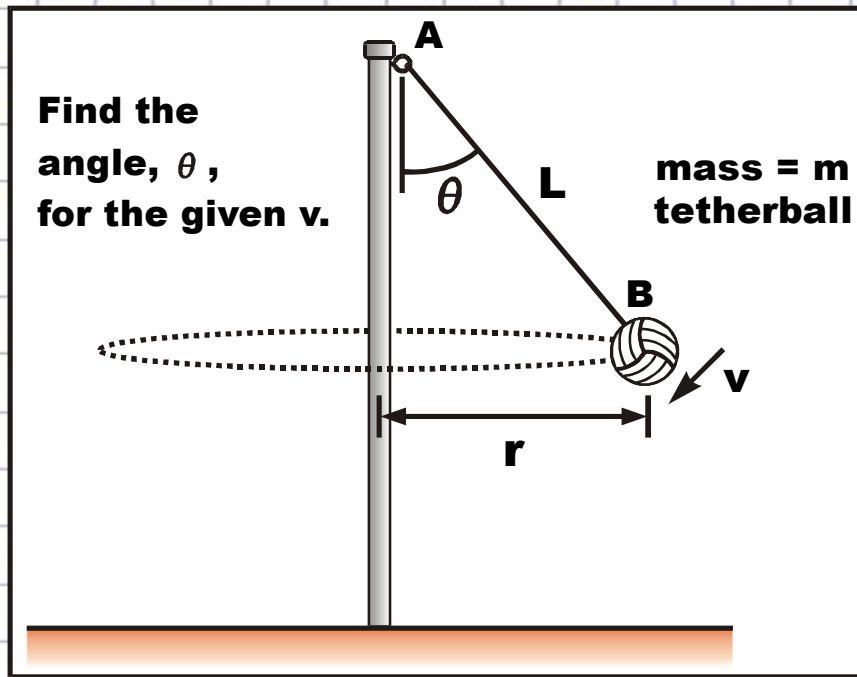
I call this a "tetherball" problem.  You see carnival rides that work like this, too.  A ball, constrained by a cable, swings in a circle (in a horizontal plane) with a constant speed v.  Write an equation that relates v, r, L, and the angle, $\theta$, and discuss the result.



Find the angle, $\theta$, for the given v.

A

$\theta$

L

mass = m
tetherball

B

v

r

**Kinds of problems:**

1. **Easy: Given $\theta$ and L or r, find the corresponding speed, v:**

2. **Harder: Given v and L or r, find the corresponding $\theta$ :**