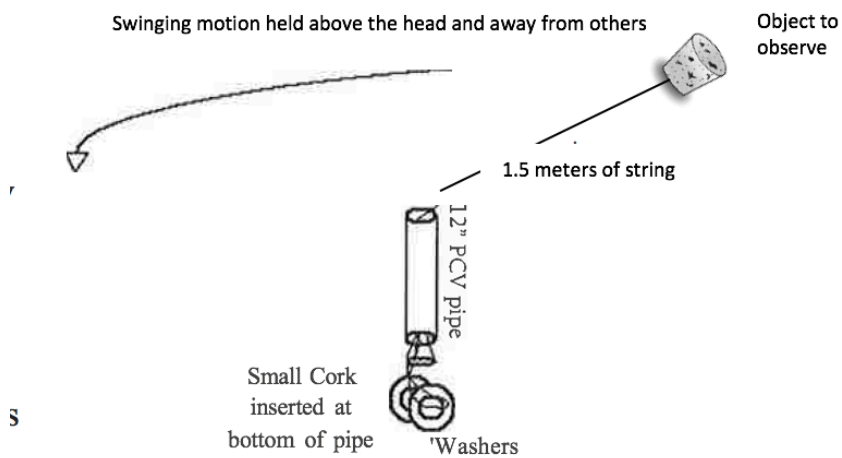


Gravity and Staying in Orbit Lesson Plan

Staying Up While Falling Down

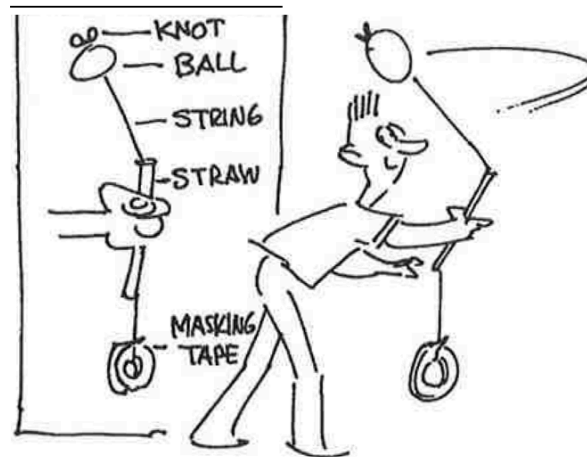
Activity 1

Why do planets stay in orbit? This activity will help make the connection between gravitational force and orbital motion. Participants will make observations, record discoveries, and graph data as they change different variables: such as, the size and mass of different corks and rubber stoppers, and length of string.



Activity 2

This activity below demonstrates how a satellite (natural or man-made) stays in orbit by modeling the effects of Earth's gravity on a satellite and the Sun's gravity on the planets. Participants will observe gravity acting as a centripetal "center-seeking" force.



1. Using a fine grade sanding paper, sand the top end of the PVC pipe smooth. (*Do not* sand both ends. The rough-cut end is needed for the Invitation to Learn activity.)
2. Thread the string through the PVC pipe and attach the weights (a gravitational force) at the bottom of the PVC pipe. *Remove the small cork stopper.*
3. Place a 'satellite' on the top end of the PVC pipe. Hold the PVC pipe and swing the satellite in orbit, the weight pulls on the string to keep the satellite from flying off. Also make observations of how the weights move up and down.

Note: Gravity and centripetal motions are two different forces. Gravity helps to keep objects in orbit by using centripetal force. (However, centripetal force makes objects go in a circular path rather than elliptical.) If gravity did not exist, objects would keep moving out and eventually fly off into space.