Name _____Date_____Period_____

Activity One: Model of an Orbiting Planet

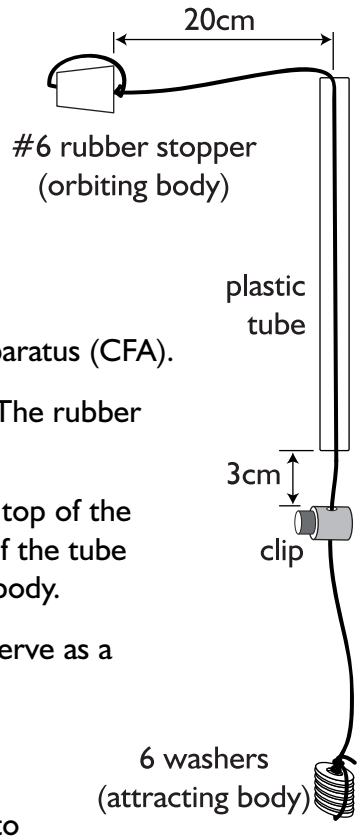
> Be sure you have enough space around you, BEFORE you begin your experiment.
> Goggles must be worn at all times during this activity.

You know that satellites orbit the Earth, that moons orbit planets, and that planets orbit stars. What factors influence a planet's orbit?

In this activity you will simulate the orbit of a planet. You will use the data you collect as your control for the next activity. A **control** is used to compare how different variables affect the outcome of a scientific investigation.

Your control planet, or orbiting body, will have the following characteristics:

- The planet: #6 stopper
- Distance from the attracting body: 20cm of string
- The attracting body: 6 washers



Materials: Centripital Force Kit, goggles and stopwatch.

Procedure:

1. Thread the string through the tube of the Centripetal Force Apparatus (CFA).
2. Tie the #6 rubber stopper onto the end of the piece of string. The rubber stopper will represent the orbiting planet in this model.
3. Pull the stopper and string so that the stopper is 20cm from the top of the tube. The length of string from the rubber stopper to the end of the tube will equal the distance (radius) of the planet from the attracting body.
4. Attach the clip to the string 3cm below the tube. This clip will serve as a marker to aid in maintaining an accurate rotation speed.
5. Tie the 6 washers on the end of the string below the tube. The washers will represent the attracting body in this model. HINT: Tie a large paper clip to the end of the string, bend one end up to make a hanger to hold the washers.
6. Put on your goggles. Hold the washers in one hand and the tube in your other hand. Swing the stopper in a circle above your head.
7. Try to keep the clip 3cm from the bottom of the tube in order to maintain rotation speed.
8. You may need to practice rotating the stopper to achieve a smooth orbit before you