03-01 Circular Motion Lab

Adapted from Take-Home Physics by Michael Horton **Objectives**

• Determine the path an object takes after centripetal force is removed.

Materials

• Small Styrofoam plate with rim and wedge cut out

• Marble

Procedure

To keep an object traveling in a circular path requires a force towards the center of the circle. This force is called the *centripetal* force. Examples of centripetal force include gravity to keep a satellite moving around the earth or tension to keep you swinging in a circular arc on a swing set. What happens when the centripetal force is removed? Make a hypothesis about what will happen. Which path will an object most closely follow when the centripetal force is removed?

Hypothesis: I think that the object will follow path _____ because _____

- 1. Put the plate on a flat surface and put a marble in the ridge.
- 2. Push the marble in the ridge so that it travels around the plate and then out of the removed section.
- 3. What is providing the centripetal force? i.e. what is keeping the marble traveling in a circle?
- 4. Perform the test several times and record your results. The marble followed path _____
- 5. Which of Newton's Laws explains the results? ____
- 6. This would have been more complicated if the object moved in a vertical circle. Why? _____

