

Handout #4
Centripetal Force

1. Go to these web sites listed on the centripetal force web page. Locate and write down the definition and explanation of what centripetal force is.

2. Go to the Funderstanding roller coaster web site.
Test out the simulator. The goal is to have the car make it around the loop of the roller coaster. After you have succeeded, think critically about centripetal force. Use your definitions and resources to help you answer the following questions:

What did you need to do to get the car through the loop?

Where do you think the force or pressure is going when you are at the top of the loop?
(For example is the force downwards, sideways, upwards, etc.)

What type of shape are most roller coaster loops? Why?

3. Now build a roller coaster model. This model should have at least one loop.

You will need the following materials:

- 2-3 pieces Styrofoam tubing (cut in half)
- 1 Marble (roller coaster car)
- Tape (To put the track- Styrofoam tubing together)
- Ruler

You are finished building this model when the marble you have goes through the roller coaster successfully.

4. Next try and build another roller coaster with more loops, then answer these questions about centripetal force and loops:

Take your ruler and measure the height of each one of your loops. How tall were they?
How many did you make in total?

What did you need for the marble to get through the loop?

Why do you think this may be important to Roller Coaster Designers?
