Objective: As part of roller coaster fun, your job is to design your own working roller coaster using the Funderstanding Roller Coaster web site! You will use the data table below to display the roller coaster design settings. If you have time, design a second working roller coaster. You can list these settings on the table as well.

1. Go to Funderstanding Roller Coasters.

2. Test out the simulator. Try each one of the controls. Record any observations you may have on the back of your graph handout paper.

3. Now lets get started on designing your coaster. Keep testing out the simulation until you find a roller coaster that goes through completely, which means the car goes completely around the loop.

4. Press the green button to play the simulation. Look at the time it took for the simulation to occur. Write this time next to the space for time in your graph.

5. Play the simulation again. This time you will need to look and see what the maximum speed of your roller coaster is. You may play the simulation more than once to get this answer. Record the maximum or greatest speed in the graph.

6. Repeat the step above to get the minimum or lowest speed of the roller coaster.

7. Finally, record each of the settings you set for Hill 1, Hill 2, Loop, Speed, Gravity, Friction and Mass. There will be a line in the graph with next to each of these words. They will have a minus and plus sign at each end, just like in the simulation. You will need to circle where the button is in your roller coaster. Try to be as accurate as possible.

8. When you are finished with your first roller coaster build a second roller coaster that is different from your first. Record your data like you did with your first roller coaster.

9. When this task is completed, get a blank sheet of paper. Explain each part of your data. You may need to refer back to your activity pages to explain your information.

10. After everyone is finished in your class, compare your results. Try to build a different person's roller coaster using only their graph and observations.

11. At the end of the design experiment, you should have gathered enough information to make a poster of what you learned about roller coasters, how they move and your design. These will be published and shared with the class at the end of your web exploration.
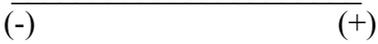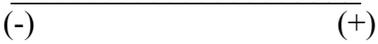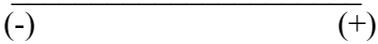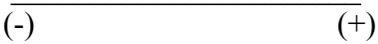
Design a Roller Coaster	Roller Coaster #1	Roller Coaster #2
Time		
Maximum Speed / Minimum Speed		
Hill #1	(-) _____ (+)	(-) _____ (+)
Hill #2	(-) _____ (+)	(-) _____ (+)
Loop	(-) _____ (+)	(-) _____ (+)
Speed	(-) _____ (+)	(-) _____ (+)
Mass	(-) _____ (+)	(-) _____ (+)
Gravity	(-) _____ (+)	(-) _____ (+)
Friction	(-) _____ (+)	(-) _____ (+)