**Theme Park Ride Project**

You and your team will be investigating laws of motion in this project. As part of this investigation you will research the physics of motion, choose a theme park model to build and experiment with, film and document your investigation, and create a science poster.

**Step 1: Research**

Your first step as a group is to research the physics of motion and understand how the laws of motion apply to theme park rides. Some resources:

* The first several pages of *Theme Park Activities*
* Your textbook
* <http://www.pbs.org/opb/circus/classroom/circus-physics/>
* <http://www.learner.org/interactives/parkphysics/>

**Step 2: Choose a Theme Park Ride and Science Activity**

Now that you have an idea of how physics of motion come into play, you and your group will decide on a theme park ride. You will build a *basic* (stripped-down) model of the ride for experimentation purposes. You will draw (by hand or computer) a full version that would be suitable for a theme park.

1. Read *Theme Park Activities* and choose one science activity.
2. Read the directions to your chosen activity carefully. Research terms and forces that apply to your activity.
3. Collect the materials you need for your science activity.
4. Discuss how your science activity is a model for a real theme park ride. Begin planning your ideal theme park ride.

**Step 3: Performing the Science Activity**

Each of the science activities has opportunities for identifying the physics of motion, of measurement, of recording data in a chart, creating a graph, and answering questions. Before performing the activity, make sure you know exactly what you are measuring and recording.

While you and your group is performing the science activity, make sure to take photos of your model and to take video of a successful (and perhaps of a not-so-successful) run.

**Step 4: Drawing the Theme Park Ride**

Time to put that research to use! Your group will create a hand-drawn or computer based drawing of your theme park ride. Feel free to add creative theming touches, consider colors, etc. The theme park is Earth-based and realistic. (The “World’s Largest” coaster is fine, but not one the size of Arkansas.)

Label the forces and laws of motion that are involved in your theme park ride.

**Step 5: Creating the Video and Poster**

Your group will be creating presentation materials for your theme park unit: a video of the science activity and a poster.

Video

1. Create a video that is 2-5 minutes long.
2. In the video give a simple explanation of the forces and laws of motion involved. (Criteria B)
3. Include video of the science activity.

Poster

1. Minimum size: standard poster paper. Maximum size: science presentation board.
2. Name of the ride and the names of the team members.
3. Labeled drawing of the theme park ride. (Criteria D)
4. Paragraphs (1-2) explaining the labels on your theme park ride. (Criteria D)
5. Photo (1-2) of the science activity.
6. Data Chart (Criteria E)
7. Graph(s) (Criteria E)
8. Conclusions – answer the discussion and conclusion questions of the science activity. (Criteria D)
9. Reflections – how to improve the model used in the science activity. (Don’t focus on time or work ethic) (Criteria D)
10. Citations

Note: This project will require high amounts of personal dedication and group work. You will need to research and reflect on information – there will be very little in the way of “directed” work. You will be expected to read directions fully. You may ask for clarification, but you and your group will be expected to do research as needed. (Criteria F)