## **Generic Lesson: Roller Coaster Physics**

## ERT B (300)

- 1. Roller coaster physics will help the student understand how a roller coaster can make them feel very heavy (+ G Force) or make them fell "weightless (- G Force) during the course of their ride.
- 2. Students will watch a great DVD "Roller Coaster Physics", produced by the Discovery Channel.
- 3. The students will talk about roller coasters in general terms.
  - **a.** The feeling you get
  - b. Speed
  - c. Drops
  - d. Etc.
- **4.** The students, prior to watching the video, will be given a handout with the following thought questions:
  - i. How do RC rides create the illusion of increased or decreased weight?
  - **ii.** How do the basic laws of physics allow a ride to accelerate?
  - iii. What do you like about RC's? Or not?
- **5.** The sub or alternate teacher will be the connection between the students and the video. The sub will utilize a white board and post the student responses prior to watching the video.
- 6. The video will be shown. All students must have paper and pen or pencil. **\*\*** Show video at this time.
- 7. Upon completion of the video, the students will be asked to complete the listed questions. (Page 2)
- **8.** After the question & answer segment, the sub may ask additional questions that were stated in the video.
- **9.** To extend this lesson, particularly if the sub will be covering the class for more than one day, the students in teams of 2 or 3 may build a "mini" roller coaster from Knex. The students can research the build on various web sites.

## **Roller Coaster Physics**

## Student Name:

- 1. How safe are roller coasters?
- 2. What is a basic rule of roller coaster operation?
- 3. How does the roller coaster get up the first hill?
- 4. What is potential energy?
- 5. What is gravity? And how is gravity represented?
- 6. + "G" forces make you feel \_\_\_\_\_.
- 7. "G" forces make you feel \_\_\_\_\_.
- 8. \_\_\_\_\_ force can make you blackout.
- 9. \_\_\_\_\_ force can make you have a red out.
- 10. Why is the first hill / drop greater than any other event?
- 11. There are 3 sets of different wheels on roller coasters. Each set has a different purpose. What is the function of each set?

After these questions are answered, lead the students to turn on their computers and:

- Open Google
- Google "Roller Coasters"
- Search different types
- Have students write a brief paper on the type of RC they prefer and why.
- Class discussion