ROLLER COASTER Ride you are studying: _____

- On graph paper, sketch a "ride profile". This is a sketch of the height of the ride as if it were stretched out in a straight line, starting on the left-hand side.
- Label the key parts of the ride: Lift, Initial Descent, Loop(s), Corkscrew, Horizontal Turn, etc.
- Put a mark on your profile to indicate the position of the train every 10 seconds.

1. Is there a place where the riders go at a constant speed? Where? How did you determine they were going at a constant speed there? (Be specific)

2. At this place on the ride, do the riders experience any net forces? Any net accelerations? In which direction is the net force if there is one? Why did you answer these questions the way you did?

3. Are any energy changes going on during this section of the ride? Describe them.

4. List 2 places where the riders are <u>speeding up</u>. (These can be between the lettered points on the graph or at specific places on the ride as you saw it in the video.) Are any energy changes going on in each section? Describe. Would the riders feel any net forces or accelerations? Describe the direction of any net forces and indicate why they would feel the net force in this direction.

Location on Ride	Energy Changes	Net Forces/Accelerations
(a)		
(b)		

5. List 2 places where the riders are slowing down. (These can be between the lettered points on the graph or at specific places on the ride as you saw it in the video.) Are any energy changes going on in each section? Describe. Would the riders feel any net forces or accelerations? Describe the direction of any net forces and indicate why they would feel the net force in this direction.

Location on Ride	Energy Changes	Net Forces/Accelerations
(c)		
(d)		

6. List 2 places where the riders are changing direction rapidly. (These can be between the lettered points on the graph or at specific places on the ride as you saw it in the video.) Are any energy changes going on in each section? Describe. Would the riders feel any net forces or accelerations? Describe the direction of any net forces and indicate why they would feel the net force in this direction.

Location on Ride	Energy Changes	Net Forces/Accelerations
(e)		
(f)		

7. For the whole ride, where does the largest force or acceleration occur? In which direction is that force? Why do you think the largest value occurs here and why is it in the direction you indicate?

8. Roller coasters are considered to be "gravity machines". Describe three (3) ways in which the gravity affects the ride and/or riders on your roller coaster. Be specific and thorough.

This worksheet can be used as a generic worksheet for students attending the amusement park. Although there are no calculations on this worksheet, it does ask them to apply their knowledge about different physics concepts and the answers can vary a lot from ride to ride