Roller Coaster Physics: Forces & Energy

Name:
Period: Date: #

Answer the following questions as you watch the video. Ask your teacher to pause the video if there is a time where complex answers are provided. Video can be viewed at: youtu.be/H3UQiuDej38

1. What is the role of the lift chain? How does it add or remove energy from the roller coaster?

2. What is the primary type of energy storage at the top of the first hill?

3. Use energy to explain why none of the hills after the first hill be higher than the first hill.

4. How does friction and air resistance affect how high the roller coaster can climb?

5. Whaat is the maxium 'g-force' experienced on many roller coasters?

6. What is a 'negative g' forrce? When does it occur, and how do you feel?

7. Is the body better capable of handling positive or negative g-forces? Why?

8. If you weigh 120 pounds and experience 4 g, how heavy do you feel?

9. How many g's can an airshow pilog experience?

10. What is the maximum g-force a roller coaster can subject its riders to?

11. Do the forces we experience on a roller coaster have any relationship to the energy? If general, do you experience positive g-forces when you have low or high kinetic energy?

12. How many sets of wheels are there on each roller coaster car? Why are there this many?

13. According to Newton's third law, why do staff at have to inspect roller coasters every day before the parks open?

14. How does **Superman The Escape** and similar rides differ from most roller-*coasters*? How and when is energy added to the cars?

15. What changes would need to be made to coasters to allow them to go faster?

Conclusion questions:

16. How do rides create the illusion of increased or decreased weight?

17. How do the basic laws of physics allow a ride to accelerate?

Turn in this paper to the sub before you leave.