



1. Where was the highest hill on the ride? Why is it there?
 2. Did you feel lateral forces while on the ride (i.e., were you thrown side to side in the train car)? If so, what forces caused that feeling?
 3. Where on the ride did you feel you were going the fastest?
 4. Where on the ride did you feel you were lifted off your seat? How did the ride cause this feeling?
 5. At which points on the ride did you experience maximum and minimum accelerations? Explain why.
 6. Calculate the potential energy of the train and riders at the top of the first hill.
- $PE = mgh$
7. Determine the speed of the train at the bottom of the first hill using the length of the train and the time it takes the train to pass a point at the bottom of the first hill.
- $v = \frac{d}{t}$
8. Use the potential energy calculated in #1 to determine the speed at the bottom of the first hill. Compare this speed to the one calculated in #2.

$$PE = KE = \frac{1}{2}mv^2$$



9. Use the speed in #2 to calculate the kinetic energy of the train at the bottom of the first hill.

$$KE = \frac{1}{2}mv^2$$

10. Determine the energy loss due to friction, using the potential energy calculated in #1 and the kinetic energy calculated in #4.

$$E_f = PE - KE$$