**Name: Due: Date:**

**Rollercoaster Project Research**

**Please define the following terms.**

1. Energy:

1. Potential Energy:
2. Gravitational Potential Energy:
3. Kinetic Energy:
4. Thermal (heat) Energy:
5. Energy Loss:

**Correctly match the formulas.**

1. Gravitational Potential Energy: **A.** KE = 1/2mv
2. Kinetic Energy: **B.** PE = mgh
3. Energy Loss:  **C. E*loss* = E*initial –*E*final***
4. A lift hill gives the coaster \_\_\_\_\_\_\_\_ energy.

 A. PE B. KE C. No energy

1. A roller coaster train, having traveled down the first drop, now has \_\_\_\_\_\_\_\_Energy.
2. PE B. KE C. No energy
3. Discuss the force of gravity while you are on a rollercoaster.
4. What is the highest G-force a human can withstand?

1. What is the highest G-force a roller coaster is allowed to produce?
2. Why must the highest drop be the first drop of a rollercoaster? Relate your answer to energy.
3. Can too much G-force be harmful to your health?
4. Why?

Fill in the blanks:

1. A roller coaster moves in the same way a marble would roll down a slanted surface. The marble rolls because it has \_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. The ride is over, theoretically, when there is too \_\_\_\_\_\_\_\_\_\_\_\_\_\_ energy left, and the ride becomes too slow to provide sufficient thrills for its riders. However, designers almost always "cut the ride short" using \_\_\_\_\_\_\_\_\_\_\_\_\_, to increase \_\_\_\_\_\_\_\_\_\_\_\_\_.
3. The human body can usually tolerate about +\_\_\_\_\_\_\_\_gz with the aid of a protective suit.

Positive G-Force becomes uncomfortable for the human body at +\_\_\_\_\_\_\_\_\_\_gz.