

Roller Coaster project CHECK LIST- MUST HAVE or else...

A. FOR THE VIDEO PRESENTATION

- Each member of the team is presenting a scientific concept in the video
- Your video shows a functional rollercoaster
- Includes a creative title displayed originally.
- Workload/ video production is divided evenly between members
- Ideas are creative and inventive
- Video includes music and graphics **BUT your voices are clearly heard**
- Video is only 5 min long and holds the attention of the audience**

B. FOR THE SCIENTIFIC CONCEPTS AS THEY RELATE TO YOUR COASTER- we have answered the following questions **in our own words, without reading from cards:**

- What does Newton's First Law state?
- What is inertia?
- How and where is INERTIA present in our roller coaster?
- What is gravity and how does it help the marble roll?
- Why does the marble not fall off the track when it goes upside down? **What 2 forces are responsible for keeping a rider in his/her spot when going upside down?**
- How does gravity and inertia keep the rider in the seat while upside down or in a loop? Explain using a diagram.**

- What does Newton's SECOND Law say?

- What is the relationship between mass and acceleration of a marble?

- What is the relationship between force and acceleration?

- What is the relationship between force and mass?

- What is the relationship between mass and momentum? Would a bigger or a smaller marble have more momentum when going down?

- How do G forces create a "butterfly sensation" while riding?

- Why does the marble stop eventually? Does friction play a role?

- What is potential energy?
- Where does the marble have the most potential energy? Why?
- What is kinetic energy?
- Where in your roller coaster does the marble have the most Kinetic Energy? Why?
- What is the Law of Conservation of momentum?
- Does your roller coaster create or destroy energy? Explain how the amount of energy stays the same but is converted from PE to KE and vice versa during the ride of the marble.
- What are the forces acting on the marble during its ride? Show where the following forces are present:

What are the forces acting on the marble during its ride? Show where the following forces are present:

- Gravity
- Normal
- Friction
- Centripetal
- Air resistance

- What is weightlessness?
- Where does the marble experience weightlessness?
- Why does the marble experience weightlessness?

POINT SCALE: EXCEEDING (35), ACCOMPLISHED (32-34), DEVELOPING(28-31), BEGINNING (20-27)

YOUR GRADE: _____/