Question: Which group will design the fastest/safest roller coaster?

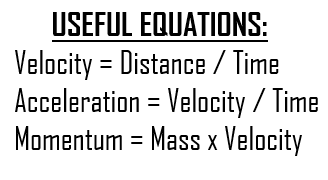
Problem: We are losing customers at our amusement park! Our advertising department has tasked your group to create a new roller coaster that will attract the masses. This roller coaster must be fast, flashy, and, most importantly, safe! One roller coaster idea will be selected from each class to be built at our amusement park. At the end of your testing you will need the final specifications of your roller coaster to present to the advertising department.

Criteria:

* Your roller coaster must have at least **two** of the following features:
  + loop, hill, jump, spiral, and/or corkscrew
* The marble must make it from the beginning hill to the cup at the end
* The group must use the *entire* length of the tube for the roller coaster
  + Two pieces put together = total length in meters
  + Figure out this length and write it down before you start to build!
* The roller coaster must be built in such a way that it can be taken apart at the end of class *without damaging the foam tubing*
  + ***ABSOLUTELY no*** ***cutting, tearing, or bending the tubing***!

Materials list:

Each group needs:

* 1 foam Tube (cut in half lengthwise) 
* 1 Steel marble
* 1 Plastic Cup
* 2 meters of Masking Tape
* 1 meter of String
* Markers, Crayons or Colored Pencils
* Meter Stick
* Stopwatch or Timer
* Ring Stand
* Triple Beam Balance

Roller Coaster Specifications

Roller Coaster name:

Roller Coaster design:

1. Draw a DETAILED picture of your roller coaster that *includes* *measurements* in the space below. Be sure to reference heights (from the ground up), distances between track components, etc. Someone else should be able to construct your track solely from this drawing. Label your drawing with the letters listed in numbers 3 -7 below:
2. **Fill out the table using the data you collect while running each of your marbles through your roller coaster.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Height of Coaster off the ground: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ m | | | | Length of the Coaster track: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ m | | | | |
| **MARBLE TYPE** | **TIME** | **MASS** | **VELOCITY** | | **ACCELERATION** | **MOMENTUM** | **PE** | **KE** |
| Steel |  |  |  | |  |  |  |  |
|  |  |  |  | |  |  |  |  |
|  |  |  |  | |  |  |  |  |

Roller coaster specifications calculations:

Show your calculations about your roller coaster

Sales pitch to advertising group:

Items to include: Highest height, speed, name, runtime, description of roller coaster, safety, etc.

How will you get the group excited about your roller coaster?