

Home Roller Coaster Criteria

Design Elements: Must include three design elements (loops, inversions, camelbacks, batwings)

Material Used:

- Minimizes friction
- Open top (car must stay on the tracks the complete ride--short tunnels OK)
- Tracks must be stationary (no swaying)
- Must be made from scratch (K'nex or other commercial materials are not to be used)
- Minimum size of 75 cm (length, width, and height)

Forces Applied:

- One force applied at the beginning--gravitational
- One force carries it through to the end--the marble completes the track
- No other forces applied throughout the ride

Measurements and Calculations: (Note: These measurements are taken in class and recorded on large wall charts after the performance assessment. Class discusses the pros and cons of materials and design features chosen.)

- Average speed
- Time vs. speed graph
- Acceleration rate
- Chart of measurement taken by segment
- Calculations of three different car weights

Journal:

- Written description of the process
- Includes commentary on materials used and tried, hypothesis about the effects the different design elements produce, conclusions formed based on calculations, and time factor involved. Include partners worked together and how it helped or hindered the process.
- Status of the project as you are working on it.

Bonus Points:

- Include setting and surroundings
- Continuous circuit