

Elitch Gardens Show Us Your Coaster Contest

Limit of 5 coaster entries per school

Roller coasters will be judged based on the following criteria:

A. Technical Merit

- Reliability
- Ride Duration
- Engineering

B. Theme and Creativity

- Ride Name
- Creativity

Coaster Model Rules

A. The model should be designed for a steel ball or glass marble. This means that the steel ball or glass marble when released from the top of the first hill by the judge will travel through the entire ride, and arrive at the bottom loading platform. (Note: for this contest, you will raise the steel ball or glass marble by hand from the loading platform to the top of the first hill to start the “ride”.)

B. A ball must be provided by the team so that it can be tested on judging day. The ball must be either a glass marble or regular size or greater, or a steel ball that is 1 cm (1/2”) diameter or greater.

C. Magnets, electricity, springs and other forms of energy may not be used to propel and or launch the ball forward – this is a “gravity ride” only. Gravity is to be the only driving force. These other sources of energy can be used for esthetics (i.e., background lighting). No electricity is provided in the contest area.

D. The starting position at the top of the first hill should be clearly marked. The steel ball or glass marble must end at the base of the lift or loading area.

E. Each competing team can have a maximum of 4 students.

F. The decision of the judges is final. Any coaster that violates the rules above or the spirit of the competition will be disqualified.

Judging Criteria

Each judge will score each entry independently; the final score for each entry will be the average of the judges' scores for that entry.

Technical Score (60 pts)

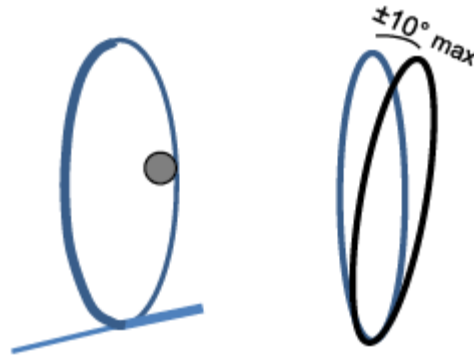
- **Reliability (36 points maximum).** Each team will demonstrate their coaster for three runs. Each successful completion of the ride (from the designated start point to the designated finish point) will earn twelve (12) points; if all three attempts are successful, the team will earn thirty-six (36) points. There are no partial points for an incomplete circuit; if the ride does not make it to the designated end point, that ride attempt will not earn any points.
- **Ride Duration (14 points maximum).** Each of the three runs will be timed. The longest time to go from the start position to the finish will be the official time for that model, unless there is a significant discrepancy (greater than 20 percent) in run times, in which case the judges may, at their discretion, use the average of the three run times as the official time. Each team will earn seven (7) points if their coaster duration is between four and six seconds, and fourteen (14) points if their coaster duration exceeds six seconds.
- **Engineering (10 points maximum).** Each judge will subjectively award up to ten points for the overall design and construction of the coaster. Factors may include the type of materials used to construct the coaster, quality of construction, etc.

Theme (40 points)

- **Ride Name (10 points).** Though a “cool” name is always desirable, this score also includes how well the name fits the overall theme of the coaster.
- **Creativity (30 points).** The model roller coaster will be judged for its merits as a possible ride to be purchased by an amusement park. Theming is an essential element of a new ride.

Bonus Points

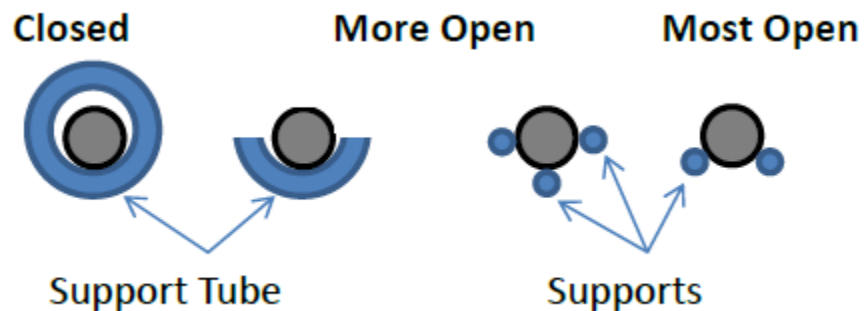
- **Vertical loops (5 points each).** Vertical loop is defined as any time for the “rider” is upside down on a loop of track that is within 10° of vertical (see illustration below). If the vertical loop is a portion of a corkscrew (helix), it counts as a vertical loop. Horizontal loops do not add bonus points.



- **Track Design (10-30 points).** Coaster models that use a predominantly “More Open” track design (the middle two examples in the diagram below) will receive ten (10) bonus points; in order to earn these bonus points, at least 90% of the track length must be “More Open”.

Coaster models that use a predominantly “Most Open” track design (the far right example in the diagram below) will receive twenty (20) bonus points; in order to earn these bonus points, at least 90% of the track length must be “Most Open”.

Coaster models that use an entirely (100%) “Most Open” track design will receive 30 bonus points.



- **Judge's Superlative Awards (15 points each).** Each judge will award fifteen points each for the best coaster in the following categories:
 - Most Thrilling/Frightening
 - Best Name
 - Most Creative/Unique

Documentation

(1) Each team must attach a 3" x 5" index card to the ride. The front of the card should include:

Name of the Roller Coaster

The back of the card (not showing) should include:

School Name

Members of the Team with grade level

Teacher Name

Teacher's contact phone number

(2) Each team should download and complete the Entry / Scoring Form. Bring it with you to the model judging at Elitch Gardens.

The contest rules and idea is based on Canada's Wonderland, California's Great America Roller Coaster Building Contest and Kings Dominion Coaster Mania Building Contest.

For more information, contact:

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Notes regarding the 2016 grading changes

The volunteer judges from the American Coaster Enthusiasts (ACE) have made changes to the grading of the "Show Us Your Coaster" contest, in hopes that the changes will speed up the judging/grading process, and give students more time to enjoy the park.

The first major change is that we are placing a greater scoring emphasis on the need for the coasters to operate reliably. In previous years we have had teams that have had difficulty getting their coasters to complete their circuits; this increases the time it takes to judge the coasters, and also takes away from

the students' time to enjoy the park. In the real world, if an amusement park invests millions of dollars into a new roller coaster, the coaster must be reliable. The judges would prefer that teams create modest and/or smaller coaster designs that operate reliably, rather than more aggressive designs that cannot consistently complete a circuit. Each team will be given three attempts to demonstrate their coaster; each successful completed "ride" will earn twelve (12) points, for a maximum of thirty-six (36) points.

The other major change is that we are no longer basing the technical merit on the contest entry with the longest ride duration. Though this may appear to be the fairest way to award points, it is problematic in several respects. It encourages larger coaster designs that must be disassembled and reassembled on site, making them more prone to breakage. It also encourages design elements such as whirlpools that extend the length of the ride to maximize points, but detract from rider enjoyment. Finally, it complicates and delays grading, since the judges need to calculate a weighted score for each team after all the grading is complete. So, for 2016, we will award seven (7) points if the coaster duration is between four and six seconds, and fourteen (14) points if the duration exceeds six seconds. Since ride durations generally correlate to coaster sizes/lengths, these values were chosen so that student teams will hopefully not feel compelled to create a giant design that may not travel well; coasters that have ride durations greater than six seconds will have maximized their points for this part of their score, and longer durations will not provide any additional benefits.