

PRODYOGIKI '19

RotoLare

Roller coasters are thrill rides that operate like a railroad track. The history of this ride reflects a constant search for greater and more death-defying thrills. They are made from steel or wood and comprise a series of hills and drops, sudden turns, track loops and corkscrew-like elements. As the roller coaster rises higher, its potential energy increases and reaches maximum at crest of hill. The potential energy accumulated by the rise in height is transferred to kinetic energy as the cars race down the first downward slope.

Teams shall design and build a “roller coaster” meeting the requirements of below rules. The “roller coaster” shall mean the entire structure, including the roller coaster track and the base, but not the actual vehicle.

Problem statement

Teams need to make model of a roller coaster track using the basic hardware material like plastic tubes, rubber tubes (transparent) and paper. (Participating teams are free to design their roller coaster around a natural theme like jungle or river etc. as that adds up to the excitement factor).

Note: Participants have to bring their model in disassembled form and have to assemble within the allotted time of the event

Items provided by Team ISTE: Stand support, transparent tube and glue gun. Participating teams are free to use any other necessary stationary required for their roller track.

Note: - Students have to bring their own track and any other material required for making the roller coaster (Team ISTE will not provide any other material apart from specified above). Commercially available roller coaster kits are not allowed to use.

Model Rules

- a) Size restrictions - the initial height should not be more than 1.0m.
- b) The model should be designed for a regular size, steel or glass marble.
- c) The exit height of the coaster must be 0.2m.
- d) The energy source for the ride can be gravitational pull only. Use of external energy sources like magnets, springs, electricity are not allowed. However, these energy sources can be used for aesthetics and design (like background lightning).

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- e) Each team will have to measure the total length of the track & write it down on respective roller coasters.
- f) You cannot get ground support from more than the support stands already provided in the kit.
- g) Teams may use more than one marble in case one marble fails to complete the track.

Judging criteria

1) Time (30 Pts): Each model will be entitled to three runs. The longest time to go from the start position to the finish will be the official time for that model.

Calculation of Points for Time = (Your time/max time of the 3 runs) * 30
For example, if your time is 27 seconds and max time = 39 sec, then you will get marks = $(27/39)*30$

2) Vertical Loop (15 Pts): Vertical loop is defined as, the loop of track where the 'rider' is upside down. If the vertical loop is a portion of a corkscrew (helix), it counts as a vertical loop.
For, 1 loop= 10 Pts

3) For, 90° turn of the track
Points: for 1 turn= 2 Pts, for 2 turns= 5 Pts
For, 180° turn of the track
Points: for 1 turn= 4 Pts, for 2 turn= 10 Pts

4) Time taken to assemble the coaster at the allotted time: -1 will be awarded for each exceeding minute the team takes more than 60 minutes.

Rules and Regulations

- a) Event is open to all.
- b) Maximum team size is 5.
- c) Participants can form teams from different branches having at least two civil engineering student.
- d) No two teams must have any common member.
- e) Teams are not allowed to touch their model once the ride begins.
- f) The decision of the judges shall be final and abiding. Any coaster that violates the rule above or the spirit of the competition will be disqualified.

Contact Us

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