



ROTOLARE

INTRODUCTION

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. Roller coasters don't have engines, they must be pulled by a motorized chain to the top of the first big hill. 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. The "COASTER" shall mean the vehicle that travels on the Roller Coaster track.

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. It is recommended to design your roller coaster around a natural theme like jungle or river etc. as that add up to the excitement factor.

Note: Participants can bring their model in disassemble form and can assemble it at the time of the event.

Materials provided by megalith team: Five rectangular blocks (6''*6''), Tape, Fevicol and Scissor.

Note: - Students have to bring their own track and any other material required for making the roller coaster (Megalith Team will not provide any other material apart from specified above). Commercially available roller coaster kits are not allowed to use. Participants need to bring 'double sided tape' to join rectangular blocks and ground.

MODEL RULES

- a) Size restrictions - the height should not be more than 2.0m.
- b) The model should be designed for a regular size, steel or glass marble.
- c) The starting and stopping points must be clearly marked in the model
- 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).
- e) Each team will have to measure the total length of the track of write it down on respective roller coasters.
- f) You cannot get ground support from more than five columns that rest on the given wooden blocks.
- g) Teams may use more than one marble in case one marble fails to complete the track.
- h) Teams can use maximum 5 supports using the rectangular blocks provided only.

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: -

Points will be relative.

Points = (Your time/max time) * 30

For example, if your time is 27 seconds and max time = 39 sec, then you will get marks = $(27/39)*30$

2) Technical Points (45 Pts):

a) Loop Factor (15 Pts):

Points= (Sum of diameters of all the loops in the roller coaster/Maximum sum of diameters)*15

b) Vertical Jump Height (5 Pts):

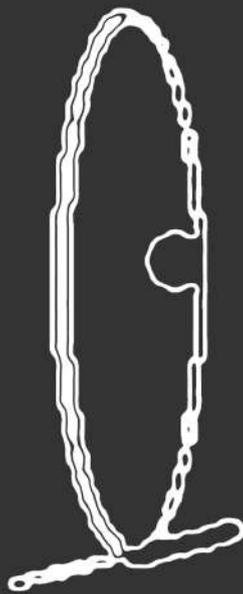
Height Coaster travels during jump.

H = Max height Coaster jumps in any Roller Coaster in competition.

h = Height jumped by your Coaster. Points = $(h/H) * 5$

c) 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.

Points: For, 1 loop= 10 Pts, 2 loop= 15 Pts.



- d) Degree of Openness (10 Pts) Points will be awarded for degree of openness of track.
Mostly closed- 0 Pts
Around 50% open - 5 Pts
More than 75% open - 10 Pts.

3) Aesthetics (25 Pts)

a) Creativity (15 Pts)

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

b) Aesthetically Charming (5 pts)

Whether the track is neatly designed and is having uniformity in colour/design. Whether it is well-constructed or having any roadway obstruction.

c) Theme (5 pts) What is the name of your roller coaster? Does your scenery support this theme? Does the design support your theme? Is there a coolness or cleverness factor in your name?

RULES & REGULATIONS

- a) Event is open to all.
- b) Maximum team size is 5.
- c) Participants can form teams from different branches/college/ university/ institute having at least one 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 time limit for the completion is 180 minutes.
- g) 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.

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