

ORUEF On-Site Engineering Challenge 2003

Rubber-Band-Powered Car

Object: Using only the materials provided, take 30 minutes to engineer a car that will travel the farthest distance along a predetermined straight line across the floor after having been released on the floor by one of the team members. This team member shall not impart any kinetic or potential energy to the car during release—no pushing, pulling, or slingshot releases. The car must remain on the floor after release; no flying cars are allowed.

Materials: Only those materials given to the team at the time of the competition may be used, although not all of the materials need to be used. No tools may be used in the construction of the car except those as may be appropriated out of the given materials. The team may not consult with anyone at any time during the competition, except for questions directed to the judges.

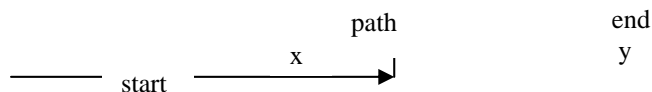
In a Ziploc bag:

1 Instruction sheet
1 race car kit

1 airplane kit
1 pencil
1 wooden ruler

5 paper clips
5 rubber bands
5 safety pins

Scoring: Attempts will be scored by determining the length of travel, in the forward direction, along a straight line, measured to the front of the car after coming to rest, minus the perpendicular distance from the line to where the car comes to rest. Scores will be ranked from maximum to minimum, with the winning team having the maximum score. If the car disintegrates during operation, the largest portion of the car (by size) shall be used for measurement. Each team will be allowed only one attempt. Attempts will be made in random order. $\text{Score} = x - y$.



Attempts: At the end of 30 minutes, each team will bring its car to the holding area, where it will be off-limits until that team is called upon to make its attempt. Before release, each team will be allowed to “crank” the propeller or otherwise impart potential energy to a rubber band or bands. Don’t get greedy and over-stress the rubber band or car by over winding. Damage that occurs at this time can not be repaired. Test the car as much as possible during the 30-minute construction phase. The releaser must take great care that no kinetic energy is imparted to the car upon release. Both hands must move quickly and directly upward, away from the car, upon release. Judges will watch carefully for this motion to occur. If it is observed that the car is sent forward in any way by the energy of the releaser during the releasing action, the score for that attempt will be zero.