

Air Powered Vehicle

LEVEL: Middle/Elementary School

DESIGN TYPE: Impromptu

DESIGN TEAM COMPOSITION: 2 students per design team

DESIGN CHALLENGE:

Your challenge is to design and build a car with a sail that is powered by a standard 9 or 10 inch stationary fan positioned 14 inches behind the starting line. A successful design is measured by the farthest distance traveled.

MATERIALS:

The following impromptu materials are provided by Colorado MESA:

- 10 drinking straws
- 4 beads with large holes for straws to pass through (approximately 1" diameter with a 3/8" diameter hole)
- Straight pins
- Scissors
- 1 stationary 9 or 10 inch fan
- Stop watch
- Masking tape
- 1 sheet 8 ½ x 11- inch paper

CHALLENGE RULES:

CONSTRUCTION

- Only above listed materials are allowed; absolutely no substitutions.
- Paper and straws may be cut with scissors provided.
- Contestants have 30 minutes to construct car. **Late starters will not be allowed extra time to finish.** Any modifications made to cars after 30 minutes is up will disqualify entry.

RACING

- At race time, vehicle is placed with its rear wheels on starting line of designated racetrack area. **The track area should be 6 feet wide.**
- The fan will be placed (in the off position) **14 inches** behind the starting line and centered behind the car. The fan should be tilted into the down position at a **45-degree** angle and taped to the floor and/or table. After the start signal is called, the fan will be turned to the **HIGH** speed. The fan will be turned off after the car stops or leaves the designated race track area.

- During the race, student may not touch any part of the vehicle.
- No additional devices can be used to propel or assist the car's movement down the official racetrack.

SCORING:

Designs are scored based on the car that travels the farthest distance and the following guidelines.

- At end of race, distance is measured from location that the car stops (from the wheel closest to the starting line) back to the starting line. **If the car stops more than once after the fan is turned off, judging will be from the final stop.**
- Each **air-powered vehicle** will be judged only once.
- The **air-powered vehicle** that travels the farthest distance is the winner.
- In the event of a tie, the tiebreaker will be an additional run. If there is still a tie after the tiebreaker round, duplicate medals will be awarded.

Awards will be given for 1st, 2nd and 3rd place design teams.