

## Mousetrap Car

- LEVEL:** Grades 9 - 12
- TYPE OF CONTEST:** Individual/Team
- COMPOSITION OF TEAM:** 1-2 Students per team
- NUMBER OF TEAMS:** Preliminary – Determined by your MESA Center  
Regional – 3 for 9<sup>th</sup>/10<sup>th</sup> Grade ; 3 for 11<sup>th</sup>/12<sup>th</sup> Grade per Center
- SPONSOR:** Vonna Hammerschmitt, Director, Chapman University MSP
- OVERVIEW:** Students will design and build their own vehicle which must be solely powered by a standard mousetrap and will travel up a 30-degree incline. Project must be the original work of the student(s). Judges may ask questions to verify.  
**Participation logistics and limits and competition facilities may vary by host site. Advisors and students are responsible for verifying this information with their center director.**
- MATERIALS:** One standard-sized mousetrap is required; All other materials to build the vehicle are legal and optional.
- GENERAL RULES:**
- 1) Students must design and build their own vehicle which must be solely powered by the mousetrap and activated by tripping the original mousetrap trip mechanism
  - 2) NO other energy source may be added. (e.g.CO<sub>2</sub> Cartridge, batteries, elastic strings, rubber bands, etc.)
  - 3) The standard mousetrap must be mounted to the chassis AND must NOT be painted or decorated.
  - 4) Hardware may be added to the mousetrap, but the original hardware and mounting block may ONLY be altered to attach it to the vehicle. The mousetrap may not be disassembled and then reassembled.
  - 5) The springs on the mousetrap may NOT be cut, bent, over-wound, heat-treated or altered in any other manner.
  - 6) No part of the vehicle may be attached to any part of the ramp.
  - 7) Vehicle must roll or coast along the ramp. All wheels must stay in contact with the surface of the ramp.
  - 8) The ramp may not be modified.
  - 9) The mousetrap car must be labeled with name, school grade and MESA Center. Improperly labeled cars will receive a 10% POINT DEDUCTION from the final score.

## **JUDGING:**

- 1) Vehicles will be checked for specifications and impounded prior to the performance event. Vehicles will be released for trials but will remain impounded between runs.
- 2) Vehicles must be in testing condition prior to check-in for vehicle performance. If vehicles are disqualified during specification check, design changes will not be allowed.
- 3) Each vehicle will be allowed 2 non-consecutive runs.
- 4) Repairs are only allowed with replacement parts and materials. All repairs must be done in the official repair area and vehicles must be ready when called for the next round.
- 5) Each vehicle must be ready for competition when called or forfeit that trial.
- 6) Each vehicle must be in a "ready, stationary, hands-off" position prior to the start order from the judge.
- 7) "Start" or "Ready Position": vehicle resting forward of the "Start Block"
- 8) One team member will be responsible for launch and will indicate to the judge that the vehicle is in the ready position.
- 9) The team member must wait until the judge gives the "START" order. If the vehicle moves prior to this, a "False Start" will be declared by the judges.
- 10) Only one "False Start" will be allowed per run. Two "False Starts" during run attempt disqualifies that run.
- 11) Students may not touch or interfere with the vehicle once the lever has been tripped.
- 12) The order of competition will be randomly selected.

## **AWARDS:**

- Awards will be given per grade level: 9<sup>th</sup>/10<sup>th</sup> grade and 11<sup>th</sup>/12<sup>th</sup> grade.
- Medals will be awarded for 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place based on the greatest distance up the ramp.
- Ribbons will be awarded for Creativity and Engineering Design.
- Only teams placing in the distance category will advance to Regional MESA Day.

## **ATTACHMENTS/APPENDIX:**

- Specification Checklist
- Track Specifications and Recommended Equipment
- Judging Guidelines

### **Specification Checklist**

*\*Note: As the name above implies, this list is intended simply as a guide for meeting the required competition specs. It should not be treated as an official judging document.*

- Standard-sized Mousetrap was used
- Mousetrap was the only energy source used
- Mousetrap has NOT been painted or decorated
- Mousetrap springs have not been modified in any way
- Car is activated by tripping the original mousetrap trip mechanism
- Mousetrap can be “set” and car can sit in a hands-off “ready mode”
- Car is properly labeled with student(s)’ name, school, grade and MESA Center

### **Track Specifications and Recommended Equipment**

- 4' X 8' smooth, finish grade plywood, arranged and supported at a 30-degree angle, with a 1" X 3" piece of wood extending the width of the ramp to act as a “Start Block”. If possible a 4' Ramp Extension may be used to allow teams to achieve maximum distance.
- Recommended Equipment & Supplies: 2-meter measuring tape (craft or sewing style); “Sign Here” Post-its for temporary identification of stop locations.

### **Judging Guidelines**

Measurements:

The distance that a vehicle travels will be measured from the front axle to the distance where the front axle stops or leaves the designated track area, perpendicular to the starting block.