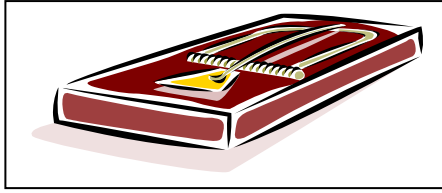


# The 7<sup>th</sup> Annual Mountain Ridge Mousetrap Car Project



60 Point Project

Your team (1 to 3 people) will design and construct a vehicle which uses a standard one-spring mousetrap (**Victor brand only**) as its sole means of propulsion. Consistent with the future of modern vehicle design, the objective shall be to produce a car that provides the greatest transportation benefit. For us, this will be the car that travels the farthest using the limited energy in the spring. **PROJECT DUE DATE:** \_\_\_\_\_, **2015**. This is a long term project and must be turned in on the due date by 2:30 according to school policy.

## Requirements:

1. Use a standard Victor mousetrap to build the car. These mousetraps are usually about 4.5 X 10 centimeters. ***No commercial car kits may be used!***
2. Teams must consist of 1 – 3 students *all of whom are in the same class period.*
3. Use the spring on the mousetrap as the sole source to power the car. (*Do not use rubber bands, CO<sub>2</sub> boosters, deformed rods, or anything else for power.*)
4. The springs on the mousetrap can be cut or bent.
5. The car must have a minimum of three wheels and can be made as long or short as desired.
6. The car may not leave the ground during its run, and may not launch projectiles.
7. The car will be tested on a smooth flat surface (namely, the hallway in the gym). The distance will be measured from the starting line to the farthest point traveled utilizing a straight line to connect the two points.
8. There will be two runs for each car; the best single performance will be used for final scoring. Cars will be ranked among 3 classes and the score weighted based on ranking.
9. The car's performance will be based on total straight-line distance traveled.

## Construction:

You will find many references to mousetrap racing on the internet. I have seen most of them by searching in Google using keywords such as “mousetrap racing” and “mousetrap cars”. Research is an important part of any project, so spend some time looking at other peoples’ work.

## Report:

A quality written report will be required from each team. This report must include the following:

1. Cover page containing:
  - Title of the Report
  - Names of team members
  - Date
2. Design – Can be a labeled drawing or written paragraph explaining the design
3. Operation of the mousetrap car – Using all of Newton’s 3 laws of motion, AND the law of conservation of energy, explain how your car works. The paragraph should include an explanation on how the energy is transferred to eventually end up with the car moving.

## Grading:

### I. Performance - 60% of project grade

Car is complete and functional (it moves & doesn't just spin its wheels)	5 %
Car travels a minimum of 3.0 meters	15 %
Car travels more than 5.0 meters	15 %
Car does not fail during performance (doesn't fall apart or break)	5 %
Rank for distance (includes all honor physics classes)	20 %

### II. Technical Report - 40% of project grade

Organization of Content	5 %
Sentence formation and mechanics	5 %
Design Section of Report	10 %
Paragraph explaining the operation of the car	20 %

### III. Bonus points: 3 points possible

Cost control is an important aspect of any engineering project. For this reason 3 extra points will be awarded to any team proving that through use of found or recycled components the team's total expenditure (including the mousetrap) is less than \$3.00.

The points will be granted to teams presenting the form on the following page, signed by **ALL** team members and **ALL** their parents. The form *must* be presented along with the project on the due date. Late forms or forms without ALL signatures *will not be accepted*. **One form per group!**

## Grading Rubric

Name \_\_\_\_\_ Hour \_\_\_\_\_ Distance traveled: \_\_\_\_\_

Name \_\_\_\_\_ Name \_\_\_\_\_

### I Performance

Car is complete and functional	___/3
Car travels a min. of 3.0 m (9'10")	___/9
Car travels more than 5.0 m (16'4")	___/9
Car does not fail during performance	___/3
Rank for distance traveled	___/12

### II Technical Report

Organization & Content	___/3
Sentence formation/mechanics	___/3
Design Section of Report	___/6
Paragraph explaining the operation of the car	___/12

III Keeping it Cheap (Bonus Points) \_\_\_\_\_/3

Total \_\_\_\_\_/60

**AFFIDAVIT of “Keeping it Cheap”**

By affixing our signatures hereto, we certify that less than three dollars total was spent by us, our parents, relatives, or friends for materials used to build our mousetrap racecar project, for tools used in building the project, and for materials or tools used in any prototypes or scrapped versions of the project. (The original cost of found or recycled materials need not be considered as part of this limit so long as the materials were unlikely to be used for another purpose within reason.)

Student 1

Name (print) \_\_\_\_\_ Signature \_\_\_\_\_

Parent 1

Name (print) \_\_\_\_\_ Signature \_\_\_\_\_

Student 2

Name (print) \_\_\_\_\_ Signature \_\_\_\_\_

Parent 2

Name (print) \_\_\_\_\_ Signature \_\_\_\_\_

Student 3

Name (print) \_\_\_\_\_ Signature \_\_\_\_\_

Parent 3

Name (print) \_\_\_\_\_ Signature \_\_\_\_\_