

## Mouse Trap propelled device

AKA " Mouse Trap Car Project"

The purpose of this project is to create a device that will propel itself across the Saint Mary's College High school gymnasium for a distance of at least forty feet (13.5 meters). The total source of energy for this propelled device shall be a single 180 degree rotation from the "killer arm" of a standard mouse trap. Students must purchase at least one of the standard mouse traps from the teacher and use it to propel his/her device.

A second purpose of this project is to encourage students to cover the maximum distance possible by rewarding students based on the total distance covered by their project . Because design originality is valued as highly as the distance covered students will be encouraged to choose designs other than the ones explained and drawn by the teacher. I will limit themselves to one or two design descriptions so as not to limit the choices students have available.

The device must start with the tongue trigger. If the device successfully covers the length of the gym without using all of its stored energy, then the student may lift and turn the device 180 degrees and allow it to return. In this case the total distance is the total forward progress in both directions.

### TIMETABLE

- Mouse trap sales ("the standard" mousetrap) 2/12/09
- Design submittal - February 12<sup>th</sup>
- Prototype Trial Thursday 2/20/09
- Final Design Submittal 2/21-23/09
- Device inspection and impound 2/26/09
- Launch and evaluation in Gym – 2/27/09

### Clarifying Regulations

- a. The trap may not be structurally modified to increase the stored energy (everyone must have access to the same amount of energy).
- b. Students are encouraged to use any and as many sources of mechanical advantage to improve the performance of their devices. (i.e.. levers, pulleys, gears, lubrication, neutral buoyancy, etc.)
- c. The path of the device generally needs to be a straight line. The distance covered is measured along its path. Should the device reverse itself (return in the opposite direction \*\*) this distance will subtract from the total. Slightly curved paths will be considered straight. Forward progress perpendicular to the start line.
- d. Gravity may be used to propel the device only if the trap provides the energy to lift the device.
- e. Energy from the mouse trap may be stored in the device and released over time to produce maximum impulse.
- f. In order to receive full credit, all project deadlines must be met.
- g. Design conformity between the original submittal and the device executed is important. If the design is modified , a written rationale for the change is required.
- h. In order for the distance covered by the device to be counted as the "distance covered" the energy source must be transported by and with the device.
- i. All designs must deliver their push or pull :
  - 1. as a result of triggering the mouse trap (holding and releasing is not acceptable)
  - 2. without the addition of special starting surfaces (push of the floor or the wall)
  - 3. a snap in mid-air with no real push is not acceptable
- \*\*\*\*\* j. Designs which truly depart from the standard will be awarded 33.3% additional distance points (Check with Teacher to be sure your design qualifies)

Special rule additions to update and modernize this project:

- k. Students should credit (site in a bibliography) design sources

especially those in print whether they come from the internet or books and magazines.

I. NO students purchasing kits

**\*\*NOTE:** return in the opposite direction means the direction of rotation on the wheels changes to the opposite--- clockwise to counter-clockwise or vice versa