

Mousetrap Vehicles 08-09



Objective:

To build a vehicle that uses a single standard mousetrap as its sole means of energy.

Scoring:

Vehicles will be scored on average velocity traveled in the lane. The top vehicles from each physics class will continue on to The First Annual MT Sprint Vehicle Finals.

Grading:

This challenge is worth 300 points. Extra credit will be given to vehicles that compete in The First Annual MT Sprint Vehicle Finals.

Mouse Trap Vehicle Trials (125 points). Each Vehicle will be tested in class. Reflection paper due 1 week after.

Mouse Trap Vehicle Races (175 points). Each Vehicle will receive maximum 3 trials during class. The Vehicle with the greatest average velocity for the 3.00 meters in each block during these races will be given a score of 100. The points for all other vehicles in that block will be based on this top score. Reflection paper due 1 week after.

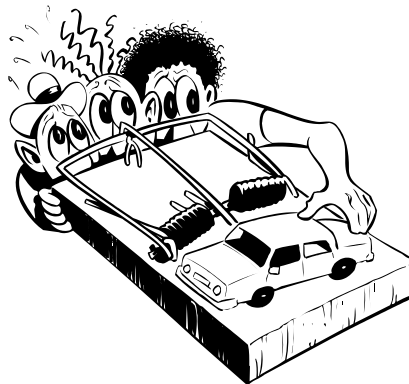
Design:

Only one standard mousetrap may be used per vehicle

Vehicles must have a place on the rear to attach the Photogate tape

A rod may be attached to the bale to increase the length of the bale

Parts from pre-made models may be used only for wheels and axels



Rules:

A standard mousetrap is any mousetrap identical to the one given in class
The energy storing or releasing capability of the mousetrap may not be altered
Holes may be drilled in the trap for attachment to vehicle but no other parts removed or altered
All parts of the vehicle must move forward as a whole
The center of mass of the vehicle must move forward a minimum of 3.00 m.
Data measurements can only be taken if the vehicle completes the 3.00 meter race
No energy source other than the mousetrap spring is allowed including gravitational energy
The vehicle must be started by the normal release mechanism of the mousetrap
Anyone found fooling around with the mousetraps in this class or anywhere in school will receive a zero for the project.

Competitors will be given minimum of 1 minute between trials to prepare their Vehicle
Vehicles must travel in a 1.00 m wide lane. Barriers will be placed at the edges of each lane.
All vehicles must start with all parts before the start line.
Vehicles must be built individually
No significant changes to the vehicles may be made during competition.

Schedule:

See your syllabus for due dates.

Suggestions:

Think of different ways that you can transfer the energy from the spring to the wheels of your vehicle. Remember that each time the axel turns once the wheels turn once. The most efficient link between the wheels and the trap is direct. Since your vehicle will under go multiple trials quality of construction contributes significantly to repeatability. The record average velocity is 2.917 m/s, set in 0708 by Ben S.

