THE MOUSETRAP CAR

Core Outcomes -

Through building a mousetrap car, students will demonstrate their understanding of the following: gears and ratios, Newton's Second Law of Physics, friction, torque, velocity and speed.

Challenge:

Using prefabricated CPEP kits, students are challenged to design, construct, evaluate, test and enter a Mousetrap vehicle in the CPEP Day competition.

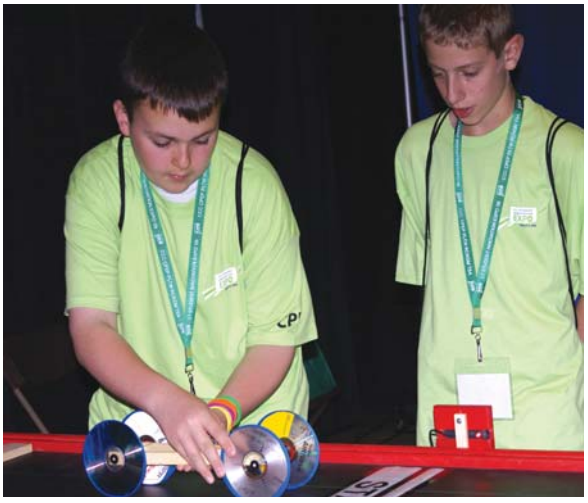
Each student team will build a Mousetrap car using the kits provided by CPEP. Each kit will contain the following:

- (1) Tomcat Mousetrap
- (2) 3/16" x 4" Wood Dowels
- (1) 2" x 5" Upper Chassis Support
- (4) CD/DVD Spacers
- (2) ¼" x ¾" x 12" Chassis Side Rails
- (1) 4" Cable Tie
- (2) ¼" x 7-1/2" Plastic Straws
- (1) 18" Length of String

These materials will allow students to build a competitive mousetrap car. Please keep in mind that students do not have to use all of these materials, and we encourage them to be creative and use other materials if they choose to do so. The only restrictions are as follows:

Rules:

- All cars must use the mousetrap supplied in the kit.
- The original spring on the mousetrap **cannot be modified in any way.**
- Standard 4-3/4" (120mm) diameter CD/DVD's must be used on the drive axle. (Vehicles may be either front or rear wheel drive.)
- A guide wire (110LB test fishing line) will be used to "guide" the car down the track during trial runs. This guide wire will run down the center of the track at a height of 1.5 cm above the track surface. Therefore, all guides must be placed beneath the car.
- The vehicle must be attached to the guide wire by at least one attachment point.
- The mousetrap vehicle must be designed so that the guide wire will not need to be attached or detached from the race track.
- If any vehicle becomes disconnected from the guide wire, that particular trial run will be disqualified.
- False starts or pushing the car forward will result in time penalties.



Judging & Scoring:

The official track for this event is 5 meters long and 40 centimeters wide. Electronic timers will be used to measure the elapsed time in each trial run. Two members of each team will bring their mousetrap car to the appropriate area for judging/inspection. After inspection, one member from the team will "hook" the mousetrap car on the guide wire at the start line. *False starts or pushing the car forward will result in time penalties.* Each team will be allowed two trial runs. The fastest time will be recorded. Between trials, teams will have a three minute time period to set up their vehicle. Once the trial run has begun, students are not allowed to touch their vehicle until it has crossed the finish line.

Prototype Mousetrap Car - An award will be provided for the Prototype Mousetrap car using the above requirements and incorporates environmentally sensitive materials. The design must use the tomcat mousetrap and the spring cannot be modified in any way.