

MIDDLE SCHOOL CHALLENGE: THE MOUSETRAP VEHICLE

Core Outcomes:

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

Challenge:

Using prefabricated CPEP kits, students are challenged to design, construct and test a mousetrap vehicle for the CPEP Day competition.

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

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

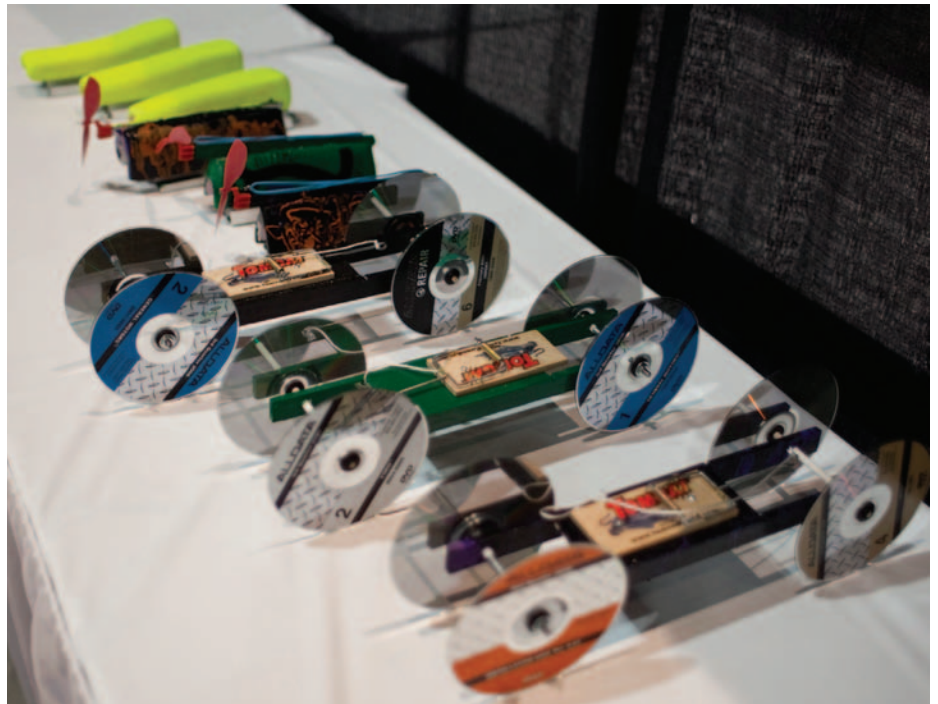
These materials will allow students to build a competitive mousetrap vehicle. Please keep in mind that students do not have to use all of these materials, and we encourage them to be creative and use other materials if they choose to do so.

Rules:

- All vehicles will be measured for **farthest distance traveled** (versus speed, which has been the challenge in years past).
- All vehicles must use the mousetrap supplied in the kit.
- The original spring on the mousetrap **cannot be modified in any way**.
- The vehicle may not be larger than 12" (30.4cm) wide, 24" (60.9cm) long, and 12" (30.4cm) high.
- Standard 4-3/4" (120mm) diameter CD/DVDs may be used as wheels, but students are permitted to use any objects or materials as a substitute.
- Vehicles may be either front or rear wheel drive.
- False starts or pushing the vehicle forward will result in disqualification.

Judging & Scoring:

The track is 1 meter wide and 30 meters long. 1" tape will be used to mark the boundaries and the centerline of the track. After inspection, one member from the team will place the mousetrap vehicle at the start line. False starts or pushing the vehicle forward will result in disqualification. The score for distance traveled will be the measurement from the start line to the front edge of the mousetrap vehicle at the point where it comes to a complete stop, or when the front edge of the vehicle travels outside of the 1 meter boundary (whichever occurs first). In the event that more than one mousetrap vehicle travels the same distance, or more than one vehicle travels the entire 30 meter distance, the winning score will be determined by measuring the vehicles' distance from the centerline. The vehicle closest to the centerline will be the winner.



HIGH SCHOOL CHALLENGE: THE MOUSETRAP VEHICLE

Core Outcomes:

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

Challenge:

Students are challenged to design, construct, and test a mousetrap vehicle for the CPEP Day competition. Students will be provided with the mousetrap only, and are required to build the chassis and wheel assemblies from any materials of their choice.

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

- Tomcat Mousetrap

Rules:

- All vehicles will be measured for **farthest distance traveled** (versus speed, which has been the challenge in years past).
- All vehicles must use the mousetrap supplied in the kit.
- The original spring on the mousetrap **cannot be modified in any way**.
- The vehicle may not be larger than 12" (30.4cm) wide, 24" (60.9cm) long, and 12" (30.4cm) high.
- Vehicles may be either front or rear wheel drive.
- False starts or pushing the vehicle forward will result in disqualification.



Judging & Scoring:

The track is 1 meter wide and 30 meters long. 1" tape will be used to mark the boundaries and the centerline of the track. After inspection, one member from the team will place the mousetrap vehicle at the start line. False starts or pushing the vehicle forward will result in disqualification. The score for distance traveled will be the measurement from the start line to the front edge of the mousetrap vehicle at the point where it comes to a complete stop, or when the front edge of the vehicle travels outside of the 1 meter boundary (whichever occurs first). In the event that more than one mousetrap vehicle travels the same distance, or more than one vehicle travels the entire 30 meter distance, the winning score will be determined by measuring the vehicles' distance from the centerline. The vehicle closest to the centerline will be the winner.