

**GRADE LEVEL**  
Elementary

**SCIENCE CONTENT STATEMENT ADDRESSED**  
Physical Science

Light, Sound and Motion

The amount of change in movement of an object is based on the weight of the object and the amount of force exerted

**OVERVIEW**

Students design vehicles from found materials (plastic litter bottle or small juice can car bodies, bottle lids for wheels, etc.) and test the effect of different weights on the cars as they roll down a ramp.



# DOWNHILL RACERS

**MATERIALS**

- Found materials to make the cars (plastic bottles, juice cans, plastic tops or lids, wooden dowel rods)
- Modeling clay sticks to act as weights for the cars
- Tennis ball
- Cord
- Ramp
- Protractor
- Yardstick or tape measure
- Stopwatch

**PROCEDURE**

- Students design vehicles from found materials (plastic litter bottle or small juice can car bodies, bottle lids for wheels, etc.) and test the effect of different weights on the cars as they roll down a ramp.
- Force could be measured by hanging a tennis ball on a cord at the end of the ramp and measuring the angle the ball swings away from the ramp when the car hits it. (the larger the swing angle, the more force the car had).
- The ball could also be removed to allow the car to continue off the ramp onto a smooth floor (tile or linoleum). The distance and time the car traveled beyond the ramp could be used to calculate the car's speed

**ASSESSMENT**

Students can use their measurements and data to observe how changes in a car's weight affects the amount of force it generates while moving.

**POST-PROJECT CLASSROOM DISCUSSION/ACTIVITIES**

You can do the extensions below based on speed as well.

Set a number of how many "time" trials you will do and record how far the car traveled each time on spreadsheet or on paper.

Calculate the average distance of your car.

Whose Car went the furthest and whose car went the shortest distance?

What observations can you make about the cars design and how that affected their speed.

What would you redesign with you car to make it go further?