

# UNDERSTANDING INERTIA



**Students will put toy cars to the test in this hands-on experiment.**

Inertia is easy enough to talk about and understand at multiple age levels, but it makes a much bigger impact when you can see it happening with your own eyes. This is especially true for understanding inertia's importance for a subject like seatbelts. In this hands-on physics lesson, students will engineer their own car tests, using toy cars, Play-Doh, and tape to see just how important seatbelts are.

## Instructions for the Lesson:

### 1. TALK ABOUT INERTIA.

You can find many great videos about inertia on YouTube, including one about seatbelts and inertia from the Georgia Department of Transportation. Give an overview of the lesson, about how they're going to do their own inertia experiment with toy cars. Encourage students to hypothesize about what's going to happen to their mini cars when adding outside factors like speed and distance.

### 2. CREATE TEST CARS AND TEST TRACK.

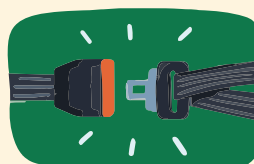
Have students build "test dummies" with Play-Doh that are small enough to fit on the hood of their toy cars. Models should slightly stick on the hood so they don't fall off right away during the test. As students finish, have a small group set up the test area—a ramp and taped-down pencil as a barrier for cars to hit.

### 3. TEST THE CARS.

Have students test their cars, sending them down the ramp to collide with the pencil. Discuss what happens, and encourage them to test out different factors like speed.

### 4. ADD SEATBELTS.

Now have students take their test dummies and secure them to their cars, using tape. Then run the test again to compare the change. Discuss with students how the impact of seatbelts can work in your favor with inertia.



## Time Required:

15-30 minutes

## Materials

- Toy cars, car ramp
- Play-Doh
- Tape, pencil

## Prep:

Borrow a toy car ramp or make your own out of cardboard. Find a set of toy cars that have enough room on the hood to build a mock person out of Play-Doh. Get pencils ready for students to set up the test area.

## Objective:

Students will gain a stronger understanding of inertia, and they will see how a person can be impacted by factors like speed. They will also better understand the role seatbelts have in cars.

## Elevate Your Lesson:

**Here are some ideas for ways to expand this lesson:**

- Add a factor like wind to your ramp, observing how it makes a difference.
- Make different test dummies to see the impact. (Example: kid vs. adult)
- Adjust the ramp's location or angle to influence speed and point of impact.