

## Activity Sheet: Inertia (Newton's 1st Law of Motion)

Name:

### Instructions

Your goal is to investigate inertia by creating a scenario where a clay object is thrown the furthest from your toy as it moves down a track and suddenly stops! You will predict how inertia will affect the clay object when the car gets stopped. As an additional challenge, compete against your classmates to see who can launch the clay object the furthest from the car! Follow the steps below to brainstorm and test your hypothesis.

### Step 1: Background knowledge

Define Newton's 1st Law of Motion and come up with your own example.

### Step 2: Form a hypothesis

Predict how inertia will affect the clay object when the car gets stopped.

### Step 3: Set Up Experiment

1. Make sure you have a large enough space for the clay ball to travel, like a classroom or hallway.
2. Assemble your track so it starts at a higher elevation than the floor. Use the measuring tape to record the height of the starting track.
3. Grab 3-4 small, identical pieces of clay and ball them up to a diameter of 3cm.
4. Grab a small piece of tape and use it to lightly place the clay object on top of the car. The clay must be able to easily detach out of the car.
5. Grab the car stopper and attach it to the last track.

### Step 4: Test

1. Now you're ready. Place your car on top of the track and let it go!
2. Use the measuring tape to record how far the piece of clay traveled from the car stopper.
3. Repeat the above steps 3 times and find the average length.
4. Next, select only one item to change (distance the car travels or height of the tallest track) to determine how far another clay object will be thrown. Record the average distance the clay traveled again.
5. Change around one variable at a time to try to get the clay to travel even farther.

### Step 5: Observations

Use the table below to record your observations.

*For example, for a change you can write 'car height at 60 cm' or 'length of 4 tracks and stopper is 5 cm from the floor'*

	Trial 1	Trial 2	Trial 3	Average Distance Traveled
Variable Changed				
<i>Control</i>				
<i>Change #1</i>				
<i>Change #2</i>				

### Step 6: Conclusion

Review your hypothesis. Which variable did you change that made the clay ball roll the furthest? Explain why you think this worked? What does your data from today's investigation tell you about inertia?

