

## Newton's Laws of Motion Station Lab

### Station #1 – Hoop Trick

1. Balance a hoop on the jar and place the golf tee on the top of the hoop. Make sure that the tee is lined up with the opening of the jar.
2. Your task is to use one hand to quickly remove the hoop so the tee drops into the jar.



#### Questions:

1. After you have mastered the task, explain what you did to master the task. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
2. Which of Newton's Laws did this demonstrate? \_\_\_\_\_

### Station #2 – Newton's Cradle

1. Using the thumb and index finger, grab a ball on the Newton's Cradle on the end and pull it away from the rest of the balls. Release the ball.
2. Explain what happened below.
3. Repeat with different combinations.

#### Observations:

Ball Combinations	Observations
Pull one back and release it	

#### Questions:

1. Which of Newton's Laws did this demonstrate? \_\_\_\_\_
2. Which force(s) eventually made the balls stop moving? \_\_\_\_\_

### Station #3 – Inertia Tower

1. Stack the blocks in a tower formation, placing a notecard in between each block, making sure that the pull strings are facing different directions.
2. Starting at the top, remove the first notecard with a swift pull directly backwards, avoiding pulling at an angle.
3. Continue removing the cards in this fashion from top to bottom, observing how the blocks stay in place.
4. Try a second time, pulling the cards out simultaneously.
5. Try building a second tower using small paper cups. Observe whether it is easier or harder to keep the cups from flying away when the cards are pulled out.



*Questions:*

1. Which of Newton's Laws did this demonstrate? \_\_\_\_\_
2. What is inertia and how did the blocks and cups demonstrate it? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Station #4 – Crash Test**

1. Place the empty cup at the bottom of the ramp with the cup opening facing the ramp.
2. Place the car at the top of the ramp and release it.
3. Measure how far the cup moved and record it on the table below.
4. Tape 2 washers to the car. Make sure NOT to tape the wheels.
5. Release the car at the top of the ramp. Measure how far the cup moved and record it on the data table below.
6. Tape 4 washers to the car. Make sure NOT to tape the wheels.
7. Release the car at the top of the ramp. Measure how far the cup moved and record it on the data table below.

*Observations:*

Car	Cup Distance (cm)
0 washers	
2 washers	
4 washers	

*Questions:*

1. Which of Newton's Laws did this demonstrate? \_\_\_\_\_
2. Which number of washers moved the cup the most? \_\_\_\_\_ Why do you think that is happening? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_