

Name: _____ Block: _____ Date: _____

Inertia Smorgasbord

The tendency for things to resist changes in motion was what Galileo called inertia. Isaac Newton later refined this idea and made it his first law, appropriately called the law of inertia. Here's an excerpt from Newton's book Principia:

Law 1: Every material object continues in its state of rest, or uniform motion, in a straight line, unless it is compelled to change by forces impressed upon it.

Essentially this means that things keep doing what they are doing, unless something happens to change that. In the following lab, predict what will happen in the following examples of inertia. Then describe what happened and explain, from the standpoint of inertia, (as if YOU were Isaac Newton) why this happened.

To Hand In:

- This sheet, answered in complete sentences.
- Writeup: (discussed on back) on separate page, stapled to this sheet. Should be around 1 page, front and back.

Writeup:

Write in complete sentences for clarity and full credit.

In a short paragraph for each station: Give explanations using the concept of inertia to explain the motions of the object in each case. In other words, what would inertia cause the object to do if no forces acted? What forces acted to change that motion? What effect did that force have? Explain it as if you were explaining to someone who has never studied this.

Marble and Plate

Roll the marble at a good clip around the rim of the plate. What happens to the marble as it leaves the plate?

Prediction?

Outcome?

Ball on String

Swing the ball on a string around your head out in the hallway. You must be careful not to hit anyone or anything. Release the string, then what happens to the ball?

Prediction?

Outcome?

Hoop and Chalk

Carefully balance the embroidery hoop atop the bottle with a piece of chalk at the very top of the hoop. Quickly grab and remove the hoop. When the hoop is gone, what happens to the chalk?

Prediction?

Outcome?

Spinning Eggs

Spin each egg, then place a finger lightly atop the egg to stop it from moving. Do this with both eggs that are on the plate. What happens? Explain why you believe this happens.
Prediction?

Outcome?

Weird Hanger Hat

Try on the silly looking coat hanger hat with clay blobs on. Spin yourself around and describe the motion of the clay.
Prediction?

Outcome?

Flick It

Place the index card on top of the beaker and place a penny on top of the index card. Carefully flick the index card without flinging the penny in the air. What happens to the penny?
Prediction?

Outcome?

On the Ball

Run at a constant speed with the ball in your hands and throw the ball straight up.
a. What is the path of the ball relative to you?
b. What is the path of the ball relative to an observer watching you?
Prediction?

Outcome?

Pull It Away

Mr. A will demonstrate another mighty magical power. Once he has the apparatus set up, think what will happen, then write what and why it happened.
Prediction?

Outcome?