

Name_____ Date_____

Collisions Lab

A collision occurs when a baseball bat hits a baseball, or a tennis racket hits a tennis ball. What would happen if you hit a baseball with a table-tennis paddle, or a table-tennis ball with a baseball bat? How do the masses of colliding objects change the results of collisions?

What You'll Investigate (Problem):

How/Why do objects change their motion?

Materials:

- Small marbles (4)
- Meter sticks (2)
- Large marble (1)

Procedure:

- Place the meter sticks next to each other, slightly farther apart than the width of the largest object.
- 1. What do you think would happen if you flick a small marble at a second marble that is stationary? Record your prediction in the box below.
- Place a small marble (target marble) in the **center** of the track formed by the meter sticks. Place a second small marble **at one end** of the track. Flick this marble at the one in the middle of the track. Draw a model of the collision.

Predicted Outcome

Actual Outcome

2. Repeat the process, replacing the one marble in the middle with 3 small marbles that are touching. **Before you begin, make a prediction on what will happen. Draw a model of your prediction.** Then draw a model of the actual collision.

Predicted Outcome

Actual Outcome

3. Repeat the process, replacing the 1 small shooter marble with 1 large marble. **Before you begin, make a prediction on what will happen. Draw a model of your prediction.** Then draw a model of the actual collision.

Predicted Outcome

Actual Outcome

4. Place one small marble at each end of the track. Flick them towards each other. **Before you begin, make a prediction on what will happen. Draw a model of your prediction.** Then draw a model of the actual collision.

Predicted Outcome

Actual Outcome

5. Place one small marble at one end of the track, and a large marble at the other end. Flick them towards each other. **Before you begin, make a prediction on what will happen. Draw a model of your prediction.** Then draw a model of the actual collision.

Predicted Outcome

Actual Outcome

Think – Pair – Share

In STEP 2, you had 3 small marbles touching in the center of the track. Then you used one small marble as a shooter. Where does the energy in the system come from? Where did energy go? Use complete sentences.

Possible sentence starters

- Based upon my observations I think _____.
- I think _____ because _____.

Share your thought with a partner. You will write your partner's explanation below.

With your partner, create an explanation for the phenomenon you observed.

What is a question or wondering you still have?

Possible sentence starters

- I wonder _____?
- A question I have is _____?
