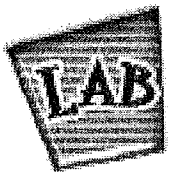
Name Date Class



Bouncing Balls

Lab Preview

Directions: *Answer these questions before you begin the lab.*

1. Why is it important to drop both balls from the same height?

2. How is the cardboard box used in this lab?

What happens when you drop a ball onto a hard, flat surface? It starts with potential energy. It bounces up and down until it finally comes to rest. Where did the energy go?

Real-World Problem

Why do bouncing balls stop bouncing?

Materials

tennis ball
rubber ball
balance
masking tape
meterstick
cardboard box
**shoe box*
**Alternate materials*

Goals

- **Identify** the forms of energy observed in a bouncing ball.
- **Infer** why the ball stops bouncing.

Safety Precautions

Procedure

1. **Measure** the mass of the two balls.
2. Have a partner drop one ball from a height of 1 m. Measure how high the ball bounced. Repeat this two more times so that you can calculate an average bounce height. Record your values on the data table.
3. Repeat step 2 for the other ball.
4. **Predict** whether the balls would bounce higher or lower if they were dropped onto the cardboard box. Design an experiment to measure how high the balls would bounce off the surface of a cardboard box.

Data and Observations

Bounce Height			
Type of Ball	Surface	Trial	Height (cm)

(continued)

Conclude and Apply

1. **Calculate** the gravitational potential energy of each ball before dropping it.

2. **Calculate** the average bounce height for the three trials under each condition. Describe your observations.

3. **Compare** the bounce heights of the balls dropped on a cardboard box with the bounce heights of the balls dropped on the floor. *Hint: Did you observe any movement of the box when the balls bounced?*

4. **Explain** why the balls bounced to different heights, using the concept of elastic potential energy.

Communicating Your Data

Meet with three other lab teams and compare average bounce heights for the tennis ball on the floor. Discuss why your results might differ. **For more help, refer to the Science Skill Handbook.**