

Name _____ Date _____

Experiment Guide Sheet: *Forces and Motion*

Activity 1: On the Move

Objective: To compare the amount of energy transferred from spheres of different masses to another object with less mass.

Time: 30 minutes

Materials:

Experiment Record Sheet for Activity 1
Masking Tape
Measuring Tape
Ramp
Slider
Large Sphere
Table Tennis Ball

Background: Now the fun really begins! In this activity, you will investigate whether the mass (and weight) of the spheres placed at different position along the ramp affects the amount of energy transferred to the slider. Be sure to record your results on your Experiment Record Sheet.

Method: Work alone or in a small group.

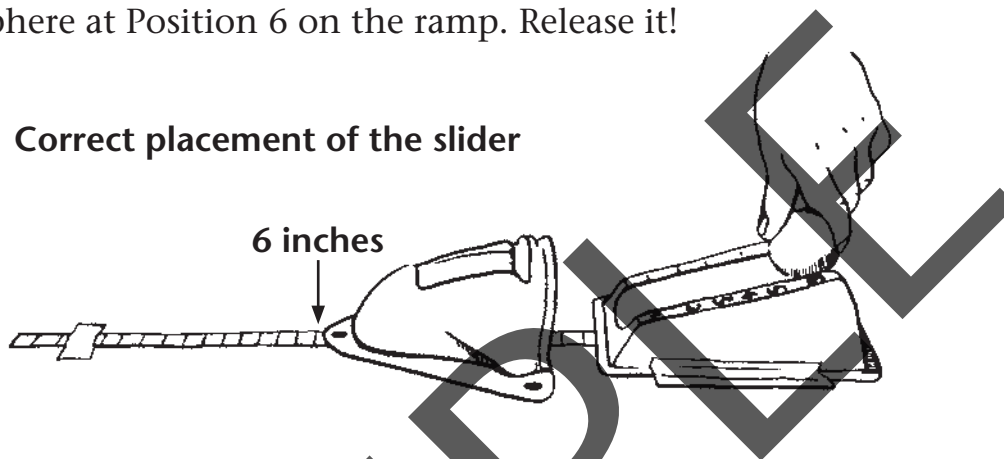
1. Tape the measuring tape securely to a flat uncarpeted surface; either side of the tape may be showing.
2. Place the low end of the plastic ramp so that it is just touching the end of the measuring tape. Use masking tape to secure the ramp to the flat surface. To make accurate measurements, the edge of the ramp should touch the end of the measuring tape.



NOTE! Choose either the metric or the standard side of the measuring tape and stay with it.

- Place the open end of the slider at the low end of the ramp. Position the closed end of the slider at the 15 cm (about 6 in.) mark. Be sure to place the slider at the same starting point for each trial. That way you'll always have accurate measurements.
- Place the sphere at Position 6 on the ramp. Release it!

Correct placement of the slider



- Measure the distance that the slider traveled. Subtract the number on the measuring tape where the slider started (15 cm or 6 in.) from the number where the slider stopped. Record the difference with the appropriate units (centimeters or inches) on your Experiment Record Sheet.
- Now, repeat Steps 2–4 at the other positions on the ramp and record your results. What do you think will happen to the slider if you repeat the trials using the table tennis ball?
- Repeat Steps 2–5 using the table tennis ball. Record your results after every trial.
- What happened to the slider when you made the trials with the table tennis ball? Did the slider move more, less, or the same? Explain why.

NOTE! It is important to start each trial with the slider in the same location.

► **What Did You Learn?**

Each sphere has a different mass. Look at the chart of your results. Which sphere transferred the most energy to the slider (made it move farthest)? Write a statement that tells about your conclusions.
