NAME DATE CLASS

Chapter 9

ENRICHMENT

Use with Section 1

• Gravity

How does slope affect the rate of descent of an object?

Complete the activity and then answer the questions.

Materials

one 2-meter-long piece of cove molding or two metersticks
if you use metersticks, masking tape and 4 meters of about 1½-inch-wide cardboard strips
a playing marble
stopwatch
boxes, books, or low tables
pen or pencil
protractor

Advance Preparation

If cove molding is unavailable, use masking tape to securely tape the ends of two metersticks together. Tape cardboard strips to the sides of the metersticks to create edges that will prevent the marble from falling off the metersticks.

Procedure

1. Prop the molding on boxes, books, or tables so that it inclines at 10° with the horizontal.
2. Ask a partner to use the stopwatch to time the descent of the marble from the time it is released onto the molding to the time it rolls onto the floor.
3. Start the marble at the top of the stick.
4. In the table below, record the height at the top of the stick and the time of the descent.
5. Repeat steps 3 and 4 three times, increasing the slope of the molding 10° each time.

Data and Observations

Slope	Height	Time	Slope	Height	Time
10°			30°		
20°			40°		

Analyze

1. Study your data. When did the marble move the fastest? When did the marble move the slowest?

_____

_____

2. Can you identify a relationship between steepness and time? For example, when you double the number of degrees of slope, how does the time change? _____

_____

Conclude and Apply

3. Why does the amount of slope affect the rate of descent? _____

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4. What effect would you expect the amount of slope to have on a rockslide or mudflow?

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