Chapter 6 Practice Test

Student Text Pages
338–339

Suggested Timing
40 min

Materials and Technology Tools
- graphing or scientific calculator (optional)

Related Resources
- BLM 6–15 Chapter 6 Practice Test
- BLM 6–16 Chapter 6 Test
- BLM 6–17 Chapter 6 Practice Test Achievement Check Rubric

Summative Assessment
- **BLM 6–15 Chapter 6 Practice Test** provides a source for possible diagnostic assessment.
- After students complete **BLM 6–15 Chapter 6 Practice Test**, you may wish to use **BLM 6–16 Chapter 6 Test** as a summative assessment.

Accommodations

Motor–encourage students to use technology for graphing

Memory–have students use index cards with calculator sequences for reference

Using the Practice Test

The practice test can be assigned as an in-class or take-home assignment. If it is used as an assessment, use the following guidelines to help you evaluate the students.
Can students do each of the following?
- evaluate powers with integral and with rational exponents
- apply the exponent rules for multiplication, division, and power of a power
- graph exponential relations
- model data using exponential functions
- derive an exponential equation that matches a given mapping or a given function machine
- recognize key properties of linear, quadratic, and exponential functions: domain, range, intercepts, intervals of increase and decreases, maximum and minimum points.
- solve problems involving real-world examples of exponential functions

- **Question 11** is an Achievement Check question. Provide students with **BLM 6–17 Chapter 6 Practice Test Achievement Check Rubric** to help them understand what is expected.

Study Guide

Use the following study guide to direct students who have difficulty with specific questions to appropriate examples to review.

Question	Section(s)	Refer to
1	6.1	Example 1 (page 282)
2	6.7	Example 1 (page 327)
3	6.3	Example 2 (page 299)
4	6.1	Example 1 (page 282)
5	6.5	Example 1 (page 313)
6	6.3	Example 1 (page 298)
7	6.1	Example 2 (page 283)
8	6.7	Example 1 (page 327)
9	6.5	Example 4 (page 316)
10	6.6	Example 1 (page 320)
11	6.7	Example 1 (page 327)

Achievement Check Sample Solution (page 339, question 11)

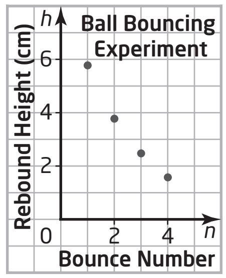
Answers may vary depending on the scale chosen.

a) Over time, the rebound height will asymptotically approach zero. Because the ball is not perfectly elastic, the rebound height eventually becomes a constant zero, meaning the ball comes to rest on the ground. Therefore, I should measure to the bottom of the ball.

The table shows the measured rebound height.

Bounce Number, *n*	Rebound Height, *h*, (cm)
1	5.8
2	3.8
3	2.5
4	1.6

b)



c) Add a column to the table in part a) to show the ratio between successive values of rebound height is (nearly) constant.

Bounce Number, *n*	Rebound Height, *h*, (cm)	Ratio
1	5.8	--
2	3.8	0.66
3	2.5	0.66
4	1.6	0.64

d) Answers may vary. Use the *Excel*® function LOGEST on the array of four h values. This yields the equation $h = 8.93(0.652)^b$. The base of the power should be close to $\frac{2}{3}$.

e) The initial height predicted by the model is:

$$\begin{aligned} h(\mathbf{0}) &= 8.93(0.652)^0 \\ &= 8.93 \end{aligned}$$

This is close to the measured height of 8.4 cm from which the ball was dropped.

The model accurately predicts the height after two bounces.

$$\begin{aligned} h(\mathbf{2}) &= 8.93(0.652)^2 \\ &= 8.93 \times 0.425 \\ &= 3.80 \end{aligned}$$

f) The rebound height changes by a factor of approximately $\frac{2}{3}$ each bounce.

$$\begin{aligned} h(\mathbf{5}) &\doteq \left(\frac{2}{3}\right)^5 \\ &= \frac{2^5}{3^5} \\ &= \frac{32}{243} > 0.1 \end{aligned} \qquad \begin{aligned} h(\mathbf{6}) &= \left(\frac{2}{3}\right)^6 \\ &= \frac{2^6}{3^6} \\ &= \frac{64}{729} < 0.1 \end{aligned}$$

So, after six bounces the rebound height should be less than 10% of the initial height.