Review

Student Text Pages
408 to 409

Suggested Timing
60–75 min

Tools
- graphing calculator

Related Resources
- BLM 7–10 Chapter 7 Review

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	7.1	Example 1 (page 365)
2	7.1	Example 1 (page 365)
3	7.1	Example 2 (pages 366–367)
4	7.2	Example 1 (pages 370–371)
5	7.2	Example 2 (pages 371–372)
6	7.2	Example 2 (pages 371–372)
7	7.2	Example 3 (pages 372–373)
8	7.2	Example 1 (pages 370–371)
9	7.3	Example 2 (page 381)
10	7.3	Example 1 (pages 380–381)
11	7.3	Example 3 (page 382)
12	7.3	Example 4 (pages 382–383)
13	7.4	Example 1 (page 388)
14	7.4	Example 2 (pages 389–390)
15	7.4	Investigate (page 387)
16	7.4	Questions 8 and 10 (page 392)
17	7.5	Example 2 (pages 400–403)

Problem Wrap-Up

Student Text Page
409

Suggested Timing
40–75 min

Tools
- graphing calculator

Related Resources
- BLM 7–11 Chapter 7 Problem Wrap-Up Rubric

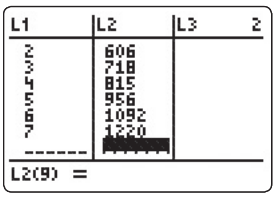
Summative Assessment
- Use **BLM 7–11 Chapter 7 Problem Wrap-Up Rubric** to assess student achievement.

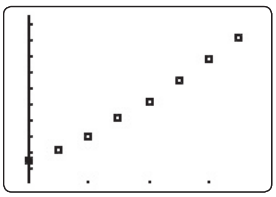
Using the Chapter Problem

Students will require graphing technology to complete this Chapter Problem. Encourage students to reflect on the work they did in exponential and logarithmic functions during the chapter, including mathematical modelling. Introduce and discuss the Chapter Problem Wrap-Up as a class. Describe and clarify the assessment criteria before students begin their work.

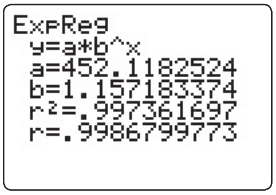
Level 3 Sample Response

a) A scatter plot for the given data was generated using a graphing calculator. To overcome an overflow error, the Year values were reduced by 2000.





b) Exponential regression yielded the following curve of best fit.



The equation corresponding to this relation is approximately $P = 452(1.16)^t$

c) Use the equation to determine the projected number of attendees in 2010 and 2015.

$$P(2010) = 452(1.16)^{10}$$
$$\doteq 1994$$

There will be approximately 1994 attendees at the 2010 concert.

$$P(2010) = 452(1.16)15$$
$$\doteq 4188$$

There will be approximately 4188 attendees at the 2015 concert.

d) Use the equation to determine when the concert will attract 5000 people.

$$5000 = 452(1.16)^t$$
$$\frac{5000}{452} = 1.16^t$$
$$\log\left(\frac{5000}{452}\right) = \log(1.16)^t$$
$$\log\left(\frac{5000}{452}\right) = t\log(1.16)$$
$$t = \frac{\log\left(\frac{5000}{452}\right)}{\log 1.16}$$
$$t \doteq 16.2$$

The attendance at Summer-Fest will reach 5000 around the year 2016. At this point the concert organizers will have to move the venue.

e) To keep Summer-Fest on Integer Island beyond 2016, the concert organizers could raise ticket prices. However, this might not be a popular strategy. Another option is to run the event twice on consecutive weekends.

Level 3 Notes

Look for:

- A mathematical model is determined using graphing technology that accurately fits the data
- All questions are answered with mathematically correct solutions, perhaps containing one or two minor errors or omissions
- The student communicates solutions with reasonable clarity
- Arguments are posed and supported with mathematical reasoning, including one or two reasonable responses to part e)

What Distinguishes Level 2

- A mathematical model is determined using graphing technology that reasonably fits the data
- Most questions are answered with generally correct solutions, perhaps containing one or two major errors or omissions
- The student communicates solutions with some clarity, however there are one or two gaps or errors in thinking
- Arguments are posed, including one or two reasonable responses to part e), but are not supported or are weakly supported with mathematical reasoning

What Distinguishes Level 4

- A mathematical model is determined using graphing technology that accurately fits the data, with justification of the model provided
- All questions are answered with mathematically correct solutions and clear explanations
- The student communicates solutions with a high degree of clarity, using more than one representation (e.g., algebra, graph, sentences)
- Arguments are posed and supported with mathematical reasoning, including several reasonable responses or one or two creative or insightful responses to part e)