NAME _____ DATE _____

Parent Guide for Student Success

For use with Chapter 8

Chapter Overview **One way that you can help your student succeed in Chapter 8 is by discussing the lesson goals in the chart below. When a lesson is completed, ask your student to interpret the lesson goals for you and to explain how the mathematics of the lesson relates to one of the key applications listed in the chart.**

Lesson Title	*Lesson Goals*	*Key Applications*
8.1: Multiplication Properties of Exponents	Use properties of exponents to multiply exponential expressions. Use powers to model real-life problems.	• Irrigation • Windmills • Multiple Choice Tests
8.2: Zero and Negative Exponents	Evaluate powers that have zero and negative exponents. Graph exponential functions.	• Basketball • Savings Accounts • Shipwrecks
8.3: Division Properties of Exponents	Use the division properties of exponents to evaluate powers, simplify expressions, and find a probability.	• Stock Exchange • Atlantic Cod • Learning Spanish
8.4: Scientific Notation	Use scientific notation to represent numbers, to perform operations with numbers, and to describe real-life situations	• Amazon River • Astronomy • Louisiana Purchase
8.5: Exponential Growth Functions	Write, use, and graph models for exponential growth.	• Compound Interest • Bicycle Racing • Bird Eggs
8.6: Exponential Decay Functions	Write, use, and graph models for exponential decay.	• Purchasing Power • Depreciation • Medications

Study Strategy

Planning Your Time is the study strategy featured in Chapter 8 (see page 448). You may wish to have your student post a calendar showing school assignments, extracurricular activities, and family commitments in a prominent place at home. This can be consulted for planning daily study time as well as for choosing when to schedule upcoming events.

NAME _____ DATE _____

Parent Guide for Student Success

For use with Chapter 8

Key Ideas **Your student can demonstrate understanding of key concepts by working through the following exercises with you.**

Lesson	Exercise
8.1	In order to test the business sense of her heirs, a rich woman made the following offer. "I will either give you a million dollars today or I will give you a dollar today, two dollars tomorrow, four dollars the next day, and so on for twenty days." Which was the better offer? Explain.
8.2	Following is the type of problem often included on college entrance exams where time is very valuable. Explain how you can find the answer quickly. Simplify the expression. Assume all variables are nonzero. $\left(\frac{[x^2y^3z]}{[x^{-7}y^{-4}]} \cdot \frac{1}{[y^{-2}z^{-4}]}\right)^0$
8.3	The sales s of a retail store for year t can be modeled by $s = 5423(1.12)^t$, where $t = 0$ corresponds to 1996. Find the ratio of 2001 sales to 1998 sales.
8.4	Evaluate the expression without using a calculator. Write the result in decimal form. $(5 \times 10^7) \cdot (9 \times 10^{-3})$
8.5	Find the balance after 5 years of an account that pays 3.5% interest compounded yearly, for an initial deposit of \$600.
8.6	Find the value of a \$15,000 car after 4 years if the car depreciates 12% per year.

Home Involvement Activity

You will need: A sheet of scrap paper, pencil, paper

Directions: Tear the scrap paper in half and throw one half away. Tear the remaining piece in half and throw half of it away. What fraction of the original paper is left? Continue tearing. Record the fraction of the original paper left after each tear. Write an exponential expression for the amount of paper left after t tears. Theoretically, will all the paper ever be thrown away? Discuss the relationship between this experiment and the decay of a radioactive material with a short half-life.

Answers

8.1: second offer; the heir gets \$1,048,575 with the second offer **8.2:** notice the zero exponent first; 1 **8.3:** about 1.4 to 1 **8.4:** 450,000 **8.5:** about \$712.61 **8.6:** about \$8,995

Activity: $\frac{1}{4}$; $\left(\frac{1}{2}\right)^t$ or $\left(1 - \frac{1}{2}\right)^t$; no