Name _____ Date _____

CHAPTER 6

Parents as Partners

For use with Chapter 6

Chapter Overview **One way you can help your student succeed in Chapter 6 is by discussing the lesson goals in the chart below. When a lesson is completed, ask your student the following questions. "What were the goals of the lesson? What new words and formulas did you learn? How can you apply the ideas of the lesson to your life?"**

Lesson Title	Lesson Goals	Key Applications
6.1: Evaluate *n*th Roots and Use Rational Exponents	Evaluate *n*th roots and study rational exponents.	• Biology • Bowling • Inflation
6.2: Apply Properties of Rational Exponents	Simplify expressions involving rational exponents.	• Airplane Velocity • Pinhole Cameras • Star Magnitude
6.3: Perform Function Operations and Composition	Perform operations with functions.	• Rhino's Heart Rate • Paint Store • Babylonian Square Root Method
6.4: Use Inverse Functions	Find inverse functions.	• Exercising • Ticket Prices • Exchange Rates
6.5: Graph Square Root and Cube Root Functions	Graph square root and cube root functions.	• Pendulums • Ocean Distances • Drag Racing
6.6: Solve Radical Equations	Solve radical equations.	• Wind Velocity • Burning Rate • Basketball Hang Time

Big Ideas for Chapter 6

In Chapter 6, you will apply the big ideas listed in the Chapter Opener (see page 413) and reviewed in the Chapter Summary (see page 465).

1. Using rational exponents
2. Performing function operations and finding inverse functions
3. Graphing radical functions and solving radical equations

Name _____ Date _____

CHAPTER SUPPORT

CHAPTER 6

Parents as Partners *continued*

For use with Chapter 6

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

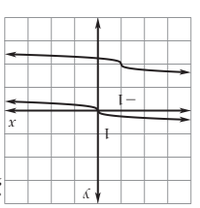
Lesson	Exercise
6.1	Evaluate the expression without using a calculator. (a) $27^{-1/3}$ (b) $128^{2/7}$ (c) $(\sqrt[3]{125})^5$
6.2	Simplify the expression. Assume all variables are positive. (a) $\sqrt[3]{6} + \sqrt[3]{162}$ (b) $15\sqrt[5]{3y^6} - 3y\sqrt[5]{96y}$ (c) $\sqrt[7]{\frac{w^{21}}{v^{14}}}$
6.3	Let $f(x) = 8x^2$ and $g(x) = 4x^{3/4}$. Find the following: $f(x) \cdot g(x)$, $\frac{f(x)}{g(x)}$, $f(g(x))$, and the domain of each.
6.4	The average price for a pair of name-brand jeans can be modeled by $P = 32.5t^{0.255}$ where t is the number of years since 1998. Write the inverse model. Then use the inverse to predict the year when the average price of jeans will reach \$54.
6.5	Graph $y = -\frac{1}{4}\sqrt[3]{x}$ and $y = -\frac{1}{4}\sqrt[3]{x+1} - 2$. State the domain of each. Compare each graph with the graph of $y = \sqrt[3]{x}$. How does the second graph differ from the first?
6.6	Solve the equation. Check for extraneous solutions. (a) $\sqrt[3]{3x-5} = 4$ (b) $(x-1)^{2/3} + 2 = 11$ (c) $\sqrt{3x+7} = x+1$

Home Involvement Activity

Directions Mark off a distance of 50 feet. Have someone with either a stopwatch or a second hand on a watch record the time (in seconds) it takes you to walk the distance, jog the distance, and then run the distance. Use the distance formula ($d = rt$) to calculate your rate in feet per second for each event. Next, find the inverse of the function $r = 0.3048x$ and use the inverse of the function to caluculate your times in meters per second.

Answers

6.1: **a.** $\frac{1}{3}$ **b.** 4 **c.** 3125 **6.2:** **a.** $4\sqrt[3]{6}$ **b.** $9y\sqrt[5]{3y}$ **c.** $\frac{w^3}{v^2}$ **6.3:** $32x^{11/4}$, domain: $x \geq 0$; $2x^{5/4}$, domain: $x > 0$; $128x^{3/2}$, domain: $x \geq 0$ **6.4:** $t = \left(\frac{P}{32.5}\right)^{3.92}$; about 7 years or 2005

6.5: 

; domain of both functions: all real numbers; The graphs are vertical shrinks of the parent graph by a factor of $\frac{1}{4}$ followed by a reflection in the x-axis. The second graph is shifted left 1 unit and down 2 units.

6.6: **a.** 23 **b.** 28 **c.** 3(−2 is an extraneous solution.)