Name: **Date:**

Practice: Rational and Irrational Numbers and Their Properties A

Use the properties of exponents to simplify the expressions. Do not evaluate.

1. $g^{-\frac{4}{9}}$

2. $8^{\frac{3}{10}} \bullet 8^{\frac{2}{7}}$

3. $\left(19^{\frac{4}{15}}\right)^{\frac{5}{2}}$

Simplify each expression, and then determine whether each answer is rational or irrational.

4. $\sqrt{4}+8$

5. $1+\sqrt[3]{10^2}$

6. $\left(\sqrt[4]{4^2}\right) \bullet \sqrt{25}$

continued

Name: **Date:**

Solve each equation for the given variable.

7. $\sqrt[3]{x^4} = 1296$

8. $d^{\frac{4}{6}} = 18$

Use the information given in each scenario to solve the problems.

9. Mia is tracking her savings account balance. She knows the equation $y = 8000p^t$ can be used to find her balance y in any year t, but she can't remember what p represents. Her balance today, $3\frac{2}{3}$ years after opening her account, is \$9,905.54. What is the value of p?

10. A new fashion trend is catching on at a high school. Five students came to school after the holidays wearing new Palioxis-brand sneakers, and 6 months later, 36 total students were wearing Palioxis sneakers. In the equation $y = 5(r^t)$, y is the number of students wearing the sneakers after time t in years. Find r, and write an equation to estimate the number of students in Palioxis sneakers after t years.