Name _____ Date _____

LESSON 7.2

Challenge Practice

For use with the lesson "Apply Exponent Properties Involving Quotients"

1. Solve for the value of a if $\frac{ax}{a^2y} = a^3$ and $x = a^5y$.
2. Solve for the value of b if $\frac{(b+1)^2}{b^2} = \frac{4(b-1)^2}{b^2}$.
3. Solve for the values of x and y if $\frac{c^x c^y}{c^{xy}} = c$ and $c^{y-1} = c^3$.
4. Solve for the value of c if $2c + 4 = 3b^2$ and $b^6 = c^3$.
5. Solve for the value of y if $\frac{d^{3x}}{d^{3y}} = d^{3x-y}$.

In Exercises 6–8, use the following information.

A common formula used to compute annual salary raises is

Salary = Starting Salary • $(1 + r)^n$

where r is the rate of annual raise and n is the number of years of employment.

Example:

Find the salary of an employee who has worked for 2 years and whose starting salary was \$25,000 at a company that gives annual raises at a rate of $r = 0.1$.

Solution:

New Salary = $\$25{,}000(1 + 0.1)^2$

= $\$25{,}000(1.21)$

= \$30,250

Suppose a company gives annual raises at a rate of $r = 0.05$.

6. What is the salary of an employee whose starting salary was \$40,000 per year and has worked at the company for 10 years?
7. What is the salary of an employee whose starting salary was \$50,000 per year and has worked at the company for 5 years?
8. What is the salary of an employee whose starting salary was \$100,000 per year and has worked at the company for 20 years?