NAME _____ DATE _____ PERIOD _____

3-8

Practice

Direct, Inverse, and Joint Variation

Write a statement of variation relating the variables of each equation. Then name the constant of variation.

1. $-\frac{x^2}{y} = 3$

***y* varies directly as the square of *x*; $-\frac{1}{3}$**

2. $E = IR$

***E* varies jointly as *I* and *R*; 1**

3. $y = 2x$

***y* varies directly as *x*; 2**

4. $d = 6t^2$

***d* varies directly as the square of *t*; 6**

Find the constant of variation for each relation and use it to write an equation for each statement. Then solve the equation.

5. Suppose y varies directly as x and $y = 35$ when $x = 5$. Find y when $x = 7$.

7; $y = 7x$; 49

6. If y varies directly as the cube of x and $y = 3$ when $x = 2$, find x when $y = 24$.

$\frac{3}{8}$; $y = \frac{3}{8}x^3$; 4

7. If y varies inversely as x and $y = 3$ when $x = 25$, find x when $y = 10$.

75; $y = \frac{75}{x}$; 7.5

8. Suppose y varies jointly as x and z, and $y = 64$ when $x = 4$ and $z = 8$. Find y when $x = 7$ and $z = 11$.

2; $y = 2xz$; 154

9. Suppose V varies jointly as h and the square of r, and $V = 45\pi$ when $r = 3$ and $h = 5$. Find r when $V = 175\pi$ and $h = 7$.

π; $V = \pi r^2 h$; 5

10. If y varies directly as x and inversely as the square of z, and $y = -5$ when $x = 10$ and $z = 2$, find y when $x = 5$ and $z = 5$.

-2; $y = -2\frac{x}{z^2}$; -0.4

11. ***Finances*** Enrique deposited $200.00 into a savings account. The simple interest I on his account varies jointly as the time t in years and the principal P. After one quarter (three months), the interest on Enrique's account is $2.75. Write an equation relating interest, principal, and time. Find the constant of variation. Then find the interest after three quarters.

***I = kPt;* 0.055; $8.25**