

## Practice

## Direct, Inverse, and Joint Variation

Write a statement of variation relating the variables of each equation.

Then name the constant of variation.

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

2.  $E = IR$

3.  $y = 2x$

4.  $d = 6t^2$

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

- Suppose  $y$  varies directly as  $x$  and  $y = 35$  when  $x = 5$ . Find  $y$  when  $x = 7$ .
- If  $y$  varies directly as the cube of  $x$  and  $y = 3$  when  $x = 2$ , find  $x$  when  $y = 24$ .
- If  $y$  varies inversely as  $x$  and  $y = 3$  when  $x = 25$ , find  $x$  when  $y = 10$ .
- Suppose  $y$  varies jointly as  $x$  and  $z$ , and  $y = 64$  when  $x = 4$  and  $z = 8$ . Find  $y$  when  $x = 7$  and  $z = 11$ .
- 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  $h = 7$ .
- 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  $z = 5$ .
- 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.