

**8-4****Practice****Direct, Joint, and Inverse Variation**

State whether each equation represents a *direct*, *joint*, or *inverse* variation. Then name the constant of variation.

1.  $u = 8wz$

2.  $p = 4s$

3.  $L = \frac{5}{k}$

4.  $xy = 4.5$

5.  $\frac{C}{d} = \pi$

6.  $2d = mn$

7.  $\frac{1.25}{g} = h$

8.  $y = \frac{3}{4x}$

Find each value.

9. If  $y$  varies directly as  $x$  and  $y = 8$  when  $x = 2$ , find  $y$  when  $x = 6$ .
10. If  $y$  varies directly as  $x$  and  $y = -16$  when  $x = 6$ , find  $x$  when  $y = -4$ .
11. If  $y$  varies directly as  $x$  and  $y = 132$  when  $x = 11$ , find  $y$  when  $x = 33$ .
12. If  $y$  varies directly as  $x$  and  $y = 7$  when  $x = 1.5$ , find  $y$  when  $x = 4$ .
13. If  $y$  varies jointly as  $x$  and  $z$  and  $y = 24$  when  $x = 2$  and  $z = 1$ , find  $y$  when  $x = 12$  and  $z = 2$ .
14. If  $y$  varies jointly as  $x$  and  $z$  and  $y = 60$  when  $x = 3$  and  $z = 4$ , find  $y$  when  $x = 6$  and  $z = 8$ .
15. If  $y$  varies jointly as  $x$  and  $z$  and  $y = 12$  when  $x = -2$  and  $z = 3$ , find  $y$  when  $x = 4$  and  $z = -1$ .
16. If  $y$  varies inversely as  $x$  and  $y = 16$  when  $x = 4$ , find  $y$  when  $x = 3$ .
17. If  $y$  varies inversely as  $x$  and  $y = 3$  when  $x = 5$ , find  $x$  when  $y = 2.5$ .
18. If  $y$  varies inversely as  $x$  and  $y = -18$  when  $x = 6$ , find  $y$  when  $x = 5$ .
19. If  $y$  varies directly as  $x$  and  $y = 5$  when  $x = 0.4$ , find  $x$  when  $y = 37.5$ .
20. **GASES** The volume  $V$  of a gas varies inversely as its pressure  $P$ . If  $V = 80$  cubic centimeters when  $P = 2000$  millimeters of mercury, find  $V$  when  $P = 320$  millimeters of mercury.
21. **SPRINGS** The length  $S$  that a spring will stretch varies directly with the weight  $F$  that is attached to the spring. If a spring stretches 20 inches with 25 pounds attached, how far will it stretch with 15 pounds attached?
22. **GEOMETRY** The area  $A$  of a trapezoid varies jointly as its height and the sum of its bases. If the area is 480 square meters when the height is 20 meters and the bases are 28 meters and 20 meters, what is the area of a trapezoid when its height is 8 meters and its bases are 10 meters and 15 meters?