8.1 EXERCISES

SKILL PRACTICE

1. **VOCABULARY** Copy and complete: If z varies directly with the product of x and y, then z is said to vary __?__ with x and y.

2. **WRITING** *Describe* how to tell whether a set of data pairs (x, y) shows inverse variation.

EXAMPLE 1
on p. 551
for Exs. 3–11

DETERMINING VARIATION Tell whether x and y show *direct variation, inverse variation,* or *neither.*

3. $xy = \dfrac{1}{5}$ 4. $y = x + 4$ 5. $\dfrac{y}{x} = 8$ 6. $4x = y$

7. $y = \dfrac{2}{x}$ 8. $x + y = 6$ 9. $8y = x$ 10. $xy = 12$

11. **TAKS REASONING** Which equation represents inverse variation?

   (A) $y = 4x$ (B) $y = x - 1$ (C) $xy = 5$ (D) $\dfrac{y}{7} = x$

EXAMPLE 2
on p. 551
for Exs. 12–19

USING INVERSE VARIATION The variables x and y vary inversely. Use the given values to write an equation relating x and y. Then find y when $x = 3$.

12. $x = 5, y = -4$ 13. $x = 1, y = 9$ 14. $x = -3, y = 8$ 15. $x = 7, y = 2$

16. $x = \dfrac{3}{4}, y = 28$ 17. $x = -4, y = -\dfrac{5}{4}$ 18. $x = -12, y = -\dfrac{1}{6}$ 19. $x = \dfrac{5}{3}, y = -7$

EXAMPLE 4
on p. 553
for Exs. 20–23

INTERPRETING DATA Determine whether x and y show *direct variation, inverse variation,* or *neither.*

20.

x	y
1.5	40
2.5	24
4	15
7.5	8
10	6

21.

x	y
12	132
18	198
23	253
29	319
34	374

22.

x	y
4	16
5	11
6.2	10
7	9
11	6

23.

x	y
4	21
6	14
8	10.5
8.4	10
12	7

EXAMPLE 5
on p. 554
for Exs. 24–30

USING JOINT VARIATION Write an equation relating x, y, and z given that z varies jointly with x and y. Then find z when $x = -4$ and $y = 5$.

24. $x = 2, y = -6, z = 24$ 25. $x = 8, y = 6, z = 12$ 26. $x = -\dfrac{1}{4}, y = -3, z = 15$

27. $x = 6, y = -7, z = -3$ 28. $x = 9, y = -2, z = 6$ 29. $x = 5, y = -3, z = 75$

30. **TAKS REASONING** Suppose z varies jointly with x and y, and $z = -36$ when $x = -3$ and $y = -4$. What is the constant of variation?

   (A) -3 (B) -2 (C) 3 (D) 12