

Practice 4-6

Inverse Variation

Suppose y varies inversely with x . Write an equation for the inverse variation.

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|---------------------------|---------------------------|---|
| 1. $x = 9$ when $y = 6$ | 2. $x = 3.6$ when $y = 5$ | 3. $x = \frac{3}{4}$ when $y = \frac{2}{9}$ |
| 4. $x = 7$ when $y = 13$ | 5. $x = 8$ when $y = 9$ | 6. $x = 4.9$ when $y = 0.8$ |
| 7. $x = 11$ when $y = 44$ | 8. $y = 8$ when $x = 9.5$ | 9. $y = 12$ when $x = \frac{5}{6}$ |

Each pair of points is on the graph of an inverse variation. Find the missing value.

- | | | |
|----------------------------------|---|--|
| 10. $(5,8)$ and $(4, m)$ | 11. $(16,5)$ and $(10,h)$ | 12. $(14, 8)$ and $(c, 7)$ |
| 13. $(3,18)$ and $(a, 27)$ | 14. $(4,28)$ and $(3,p)$ | 15. $(100,25)$ and $(4, a)$ |
| 16. $(x, 7)$ and $(2,14)$ | 17. $(\frac{2}{5}, \frac{3}{2})$ and $(k, \frac{5}{2})$ | 18. $(16,3)$ and $(g, 24)$ |
| 19. $(2.4,19.8)$ and $(h, 13.2)$ | 20. $(12.4,6.6)$ and $(f, 8.8)$ | 21. $(3.2,k)$ and $(9.2,0.8)$ |
| 22. $(18,24)$ and $(72,v)$ | 23. $(17,0.9)$ and $(5.1,x)$ | 24. $(\frac{3}{4}, y)$ and $(\frac{2}{3}, 18)$ |

Explain whether each situation represents a direct variation or an inverse variation.

25. The cost of a \$50 birthday gift is split among some friends.
26. You purchase some peaches at \$1.29/lb.

Do the data in each table represent a direct variation, or an inverse variation? Write an equation to model the data in each table.

27.

| | | | |
|----------|----|----|----|
| x | 2 | 7 | 10 |
| y | 35 | 10 | 7 |

28.

| | | | |
|----------|----|---|----|
| x | 3 | 6 | 24 |
| y | 16 | 8 | 2 |

29.

| | | | |
|----------|----|----|----|
| x | 5 | 6 | 8 |
| y | 55 | 66 | 88 |

30.

| | | | |
|----------|---|----|----|
| x | 2 | 8 | 16 |
| y | 9 | 36 | 72 |

31.

| | | | |
|----------|----|----|---|
| x | 2 | 3 | 9 |
| y | 18 | 12 | 4 |

32.

| | | | |
|----------|-----|------|----|
| x | 2 | 6 | 10 |
| y | 4.2 | 12.6 | 21 |

33.

| | | | |
|----------|------|----|------|
| x | 2 | 5 | 12 |
| y | 12.8 | 32 | 76.8 |

34.

| | | | |
|----------|-----|-----|-----|
| x | 1.2 | 1.5 | 2.4 |
| y | 5 | 4 | 2.5 |

35.

| | | | |
|----------|---|---|-----|
| x | 6 | 9 | 36 |
| y | 3 | 2 | 0.5 |

36. The volume V of a gas in a closed container varies inversely with the pressure p , in atmospheres, that is applied to that gas.
- If $V = 20$ m when $p = 1$ atm, find V when $p = 4$ atm.
 - If $V = 24$ m when $p = 3$ atm, find p when $V = 36$ m.
 - If $V = 48$ m when $p = 2$ atm, find V when $p = 5$ atm.
37. The time t to travel a fixed distance varies inversely with the rate r of travel.
- If $t = 3$ h and $r = 25$ mi/h, find t when $r = 50$ mi/h.
 - If $t = 120$ s and $r = 40$ ft/s, find r when $t = 25$ s.