1. If $x = 56$ when $y = 80$ and x varies directly as y, then find x when $y = 170$.

   [A] 129 [B] 109 [C] 114 [D] 119

2. If $x = 152$ when $y = 190$ and x varies directly as y, then find x when $y = 110$.

   [A] 93 [B] 78 [C] 88 [D] 98

3. If $x = 162$ when $y = 180$ and x varies directly as y, then find x when $y = 40$.

   [A] 46 [B] 36 [C] 26 [D] 31

4. If $x = 96$ when $y = 160$ and x varies directly as y, then find x when $y = 90$.

   [A] 64 [B] 54 [C] 44 [D] 49

5. If $x = 42$ when $y = 60$ and x varies directly as y, then find x when $y = 120$.

   [A] 94 [B] 84 [C] 79 [D] 74

6. If $x = 54$ when $y = 60$ and x varies directly as y, then find x when $y = 110$.

   [A] 89 [B] 99 [C] 104 [D] 109

7. If $x = 136$ when $y = 170$ and x varies directly as y, then find x when $y = 90$.

   [A] 62 [B] 72 [C] 82 [D] 77

8. If $x = 84$ when $y = 140$ and x varies directly as y, then find x when $y = 190$.

   [A] 124 [B] 119 [C] 114 [D] 104

9. If $x = 18$ when $y = 20$ and x varies directly as y, then find x when $y = 120$.

   [A] 98 [B] 108 [C] 103 [D] 118

10. If $x = 56$ when $y = 80$ and x varies directly as y, then find x when $y = 160$.

    [A] 117 [B] 102 [C] 112 [D] 122

11. Write the variation equation and find the quantity indicated. x varies directly as y. If x is 30 when y is 50, find x when y is 80.

12. Write the variation equation and find the quantity indicated. x varies directly as y. If x is 126 when y is 140, find x when y is 90.

13. Write the variation equation and find the quantity indicated. x varies directly as y. If x is 68 when y is 170, find x when y is 160.

14. Write the variation equation and find the quantity indicated. x varies directly as y. If x is 33 when y is 110, find x when y is 70.

15. Write the variation equation and find the quantity indicated. x varies directly as y. If x is 162 when y is 180, find x when y is 60.

16. Write the variation equation and find the quantity indicated. x varies directly as y. If x is 48 when y is 60, find x when y is 120.

17. Write the variation equation and find the quantity indicated. x varies directly as y. If x is 33 when y is 110, find x when y is 90.

18. Write the variation equation and find the quantity indicated. x varies directly as y. If x is 42 when y is 70, find x when y is 150.

19. Write the variation equation and find the quantity indicated. x varies directly as y. If x is 119 when y is 170, find x when y is 190.

20. Write the variation equation and find the quantity indicated. x varies directly as y. If x is 10 when y is 50, find x when y is 180.

Use the information to write the appropriate variation equation, and find y for the given values.

21. y varies jointly as x and z. $y = \frac{64}{3}$ when $x = 2$ and $z = 4$. Find y when $x = 7$ and $z = 2$.

[A] $y = \frac{3}{4}xz;\ \frac{21}{2}$ [B] $y = \frac{3}{8}xz;\ \frac{21}{4}$ [C] $y = \frac{16}{3}xz;\ \frac{224}{3}$ [D] $y = \frac{8}{3}xz;\ \frac{112}{3}$

Use the information to write the appropriate variation equation, and find y for the given values.

22. y varies directly as x and inversely as z. $y = \frac{8}{7}$ when $x = 4$ and $z = 7$. Find y when $x = 6$ and $z = 5$.

[A] $y = \frac{2z}{x}$; $\frac{5}{3}$ [B] $y = \frac{2x}{z}$; $\frac{12}{5}$ [C] $y = \frac{z}{2x}$; $\frac{5}{12}$ [D] $y = \frac{x}{z}$; $\frac{6}{5}$

23. y varies directly as x and inversely as z. $y = \frac{12}{5}$ when $x = 4$ and $z = 5$. Find y when $x = 3$ and $z = 6$.

[A] $y = \frac{x}{3z}$; $\frac{1}{6}$ [B] $y = \frac{3x}{z}$; $\frac{3}{2}$ [C] $y = \frac{3z}{x}$; 6 [D] $y = \frac{z}{3x}$; $\frac{2}{3}$

24. y varies jointly as x and z. $y = 4$ when $x = 2$ and $z = 3$. Find y when $x = 6$ and $z = 2$.

[A] $y = \frac{4}{3}xz$; 16 [B] $y = 3xz$; 36 [C] $y = \frac{2}{3}xz$; 8 [D] $y = \frac{3}{2}xz$; 18

25. y varies directly as x and inversely as z. $y = \frac{5}{3}$ when $x = 4$ and $z = 4$. Find y when $x = 7$ and $z = 5$.

[A] $y = \frac{3z}{5x}$; $\frac{3}{7}$ [B] $y = \frac{3x}{5z}$; $\frac{21}{25}$ [C] $y = \frac{5z}{3x}$; $\frac{25}{21}$ [D] $y = \frac{5x}{3z}$; $\frac{7}{3}$

26. y varies jointly as x and z. $y = 140$ when $x = 5$ and $z = 7$. Find y when $x = 8$ and $z = 6$.

[A] $y = 4xz$; 192 [B] $y = \frac{1}{4}xz$; 12 [C] $y = \frac{1}{2}xz$; 24 [D] $y = 8xz$; 384

27. y varies directly as x and inversely as z. $y = \frac{4}{5}$ when $x = 2$ and $z = 5$. Find y when $x = 3$ and $z = 3$.

[A] $y = \frac{z}{2x}$; $\frac{1}{2}$ [B] $y = \frac{6z}{3x}$; 2 [C] $y = \frac{3x}{3z}$; 1 [D] $y = \frac{2x}{z}$; 2

Use the information to write the appropriate variation equation, and find y for the given values.

28. y varies jointly as x and z. $y = 16$ when $x = 2$ and $z = 4$. Find y when $x = 3$ and $z = 2$.

[A] $y = \frac{1}{2}xz$; 3 [B] $y = 4xz$; 24 [C] $y = 2xz$; 12 [D] $y = xz$; 6

29. y varies directly as x and inversely as z. $y = \frac{12}{7}$ when $x = 3$ and $z = 7$. Find y when $x = 6$ and $z = 5$.

[A] $y = \frac{x}{2z}$; $\frac{3}{5}$ [B] $y = \frac{4z}{x}$; $\frac{10}{3}$ [C] $y = \frac{4x}{z}$; $\frac{24}{5}$ [D] $y = \frac{z}{4x}$; $\frac{5}{24}$

30. y varies directly as x and inversely as z. $y = \frac{5}{4}$ when $x = 3$ and $z = 4$. Find y when $x = 5$ and $z = 3$.

[A] $y = \frac{3x}{5z}$; 1 [B] $y = \frac{5x}{3z}$; $\frac{25}{9}$ [C] $y = \frac{5z}{3x}$; 1 [D] $y = \frac{3z}{5x}$; $\frac{9}{25}$

31. y varies jointly as x and the inverse of z. $y = -\frac{33}{2}$ when $x = -11$ and $z = 4$. Find y when $x = 7$ and $z = -6$.

[A] $y = \frac{6x}{z}$; -7 [B] $y = \frac{z}{3x}$; $-\frac{2}{7}$ [C] $y = \frac{xz}{6}$; -7 [D] $y = \frac{6}{xz}$; $-\frac{1}{7}$

32. y varies jointly as x and the inverse of z. $y = -\frac{35}{4}$ when $x = -10$ and $z = 8$. Find y when $x = 5$ and $z = -8$.

[A] $y = \frac{xz}{7}$; $-\frac{40}{7}$ [B] $y = \frac{7}{xz}$; $-\frac{7}{40}$ [C] $y = \frac{7x}{z}$; $-\frac{35}{8}$ [D] $y = \frac{z}{3x}$; $-\frac{8}{15}$

33. y varies jointly as x and the inverse of z. $y = -6$ when $x = -4$ and $z = 6$. Find y when $x = 12$ and $z = -3$.

[A] $y = \frac{xz}{9}$; -4 [B] $y = \frac{9}{xz}$; $-\frac{1}{4}$ [C] $y = \frac{z}{3x}$; $-\frac{1}{12}$ [D] $y = \frac{9x}{z}$; -36

Use the information to write the appropriate variation equation, and find y for the given values.

34. y varies jointly as x and the inverse of z. $y = -\frac{16}{9}$ when $x = -2$ and $z = 9$. Find y when $x = 9$ and $z = -4$.

[A] $y = \frac{8x}{z}$; -18 [B] $y = \frac{z}{3x}$; $-\frac{4}{27}$ [C] $y = \frac{8}{xz}$; $-\frac{2}{9}$ [D] $y = \frac{xz}{8}$; $-\frac{9}{2}$

35. y varies jointly as x and the inverse of z. $y = -\frac{6}{7}$ when $x = -3$ and $z = 7$. Find y when $x = 11$ and $z = -5$.

[A] $y = \frac{xz}{2}$; $-\frac{55}{2}$ [B] $y = \frac{z}{3x}$; $-\frac{5}{33}$ [C] $y = \frac{2x}{z}$; $-\frac{22}{5}$ [D] $y = \frac{2}{xz}$; $-\frac{2}{55}$

36. y varies jointly as x and the inverse of z. $y = -20$ when $x = -12$ and $z = 3$. Find y when $x = 6$ and $z = -7$.

[A] $y = \frac{5}{xz}$; $-\frac{5}{42}$ [B] $y = \frac{5x}{z}$; $-\frac{30}{7}$ [C] $y = \frac{xz}{5}$; $-\frac{42}{5}$ [D] $y = \frac{z}{3x}$; $-\frac{7}{18}$

37. y varies jointly as x and the inverse of z. $y = -\frac{27}{5}$ when $x = -9$ and $z = 5$. Find y when $x = 4$ and $z = -6$.

[A] $y = \frac{z}{3x}$; $-\frac{1}{2}$ [B] $y = \frac{3}{xz}$; $-\frac{1}{8}$ [C] $y = \frac{xz}{3}$; -8 [D] $y = \frac{3x}{z}$; -2

38. y varies jointly as x and the inverse of z. $y = -6$ when $x = -8$ and $z = 4$. Find y when $x = 3$ and $z = -9$.

[A] $y = \frac{z}{3x}$; -1 [B] $y = \frac{xz}{3}$; -9 [C] $y = \frac{3}{xz}$; $-\frac{1}{9}$ [D] $y = \frac{3x}{z}$; -1

39. y varies jointly as x and the inverse of z. $y = -\frac{45}{2}$ when $x = -5$ and $z = 2$. Find y when $x = 10$ and $z = -8$.

[A] $y = \frac{9}{xz}$; $-\frac{9}{80}$ [B] $y = \frac{9x}{z}$; $-\frac{45}{4}$ [C] $y = \frac{xz}{9}$; $-\frac{80}{9}$ [D] $y = \frac{z}{3x}$; $-\frac{4}{15}$

Use the information to write the appropriate variation equation, and find y for the given values.

40. y varies jointly as x and the inverse of z. $y = -\frac{35}{8}$ when $x = -7$ and $z = 8$. Find y when $x = 2$ and $z = -3$.

[A] $y = \frac{xz}{5}; -\frac{6}{5}$ [B] $y = \frac{5x}{z}; -\frac{10}{3}$ [C] $y = \frac{z}{3x}; -\frac{1}{2}$ [D] $y = \frac{5}{xz}; -\frac{5}{6}$

41. y varies inversely as x. $y = \frac{9}{4}$ when $x = 4$. Find y when $x = 9$.

42. y varies inversely as x. $y = \frac{1}{3}$ when $x = 9$. Find y when $x = 4$.

43. y varies inversely as x. $y = \frac{6}{7}$ when $x = 7$. Find y when $x = 3$.

44. y varies inversely as x. $y = 1$ when $x = 5$. Find y when $x = 8$.

45. y varies inversely as x. $y = 1$ when $x = 8$. Find y when $x = 5$.

46. y varies inversely as x. $y = \frac{4}{3}$ when $x = 3$. Find y when $x = 7$.

47. y varies inversely as x. $y = 1$ when $x = 2$. Find y when $x = 9$.

48. y varies inversely as x. $y = \frac{7}{9}$ when $x = 9$. Find y when $x = 6$.

49. y varies inversely as x. $y = \frac{7}{6}$ when $x = 6$. Find y when $x = 3$.

Use the information to write the appropriate variation equation, and find y for the given values.

50. y varies inversely as x. $y = \frac{6}{7}$ when $x = 7$. Find y when $x = 8$.

51. y varies jointly as w and x and inversely as z. $y = -36$ when $w = 7,\ x = 4,$ and $z = -7$. Find y when $w = 7,\ x = 2,$ and $z = 7$.

52. y varies jointly as w and x and inversely as z. $y = -72$ when $w = 8,\ x = 4,$ and $z = -4$. Find y when $w = 8,\ x = 5,$ and $z = 3$.

53. y varies jointly as w and x and inversely as z. $y = -28$ when $w = 6,\ x = 2,$ and $z = -3$. Find y when $w = 6,\ x = 3,$ and $z = 2$.

54. y varies jointly as w and x and inversely as z. $y = -36$ when $w = 4,\ x = 5,$ and $z = -5$. Find y when $w = 4,\ x = 3,$ and $z = 4$.

55. y varies jointly as w and x and inversely as z. $y = -18$ when $w = 8,\ x = 2,$ and $z = -8$. Find y when $w = 8,\ x = 6,$ and $z = 4$.

56. y varies jointly as w and x and inversely as z. $y = -21$ when $w = 7,\ x = 6,$ and $z = -4$. Find y when $w = 7,\ x = 4,$ and $z = 8$.

57. y varies jointly as w and x and inversely as z. $y = -18$ when $w = 9,\ x = 2,$ and $z = -5$. Find y when $w = 9,\ x = 6,$ and $z = 3$.

58. y varies jointly as w and x and inversely as z. $y = -12$ when $w = 4,\ x = 8,$ and $z = -8$. Find y when $w = 4,\ x = 7,$ and $z = 2$.

59. y varies jointly as w and x and inversely as z. $y = -42$ when $w = 7,\ x = 3,$ and $z = -3$. Find y when $w = 7,\ x = 4,$ and $z = 8$.

Use the information to write the appropriate variation equation, and find y for the given values.

60. y varies jointly as w and x and inversely as z. $y = -24$ when $w = 6,\ x = 8,$ and $z = -6$. Find y when $w = 6,\ x = 2,$ and $z = 2$.