2.4 Exercises

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‹ Study Tips ›

- When studying for an exam, start by working the exercises in the Chapter Review. They are grouped by section so that you can go back and review any topics that you have trouble with.
- Never leave an exam early. Most papers turned in early contain careless errors that could be found and corrected. Every point counts.

Reading and Writing *After reading this section, write out the answers to these questions. Use complete sentences.*

1. What is a formula?
2. What is a literal equation?
3. What does it mean to solve a formula for a certain variable?
4. How do you solve a formula for a variable that appears on both sides?
5. What are the two methods shown for finding the value of a variable in a formula?
6. What formula expresses the perimeter of a rectangle in terms of its length and width?

‹1› Solving for a Variable

Solve each formula for the specified variable. See Examples 1 and 2.

7. $D = RT$ for R
8. $A = LW$ for W
9. $C = \pi D$ for D
10. $F = ma$ for a
11. $I = Prt$ for P
12. VIDEO $I = Prt$ for t
13. $F = \frac{9}{5}C + 32$ for C
14. $y = \frac{3}{4}x - 7$ for x
15. $A = \frac{1}{2}bh$ for h
16. $A = \frac{1}{2}bh$ for b
17. $P = 2L + 2W$ for L
18. VIDEO $P = 2L + 2W$ for W
19. $A = \frac{1}{2}(a + b)$ for a
20. $A = \frac{1}{2}(a + b)$ for b
21. $S = P + Prt$ for r
22. $S = P + Prt$ for t
23. $A = \frac{1}{2}h(a + b)$ for a
24. $A = \frac{1}{2}h(a + b)$ for b

Solve each equation for x. See Example 3.

25. $5x + a = 3x + b$
26. $2c - x = 4x + c - 5b$
27. $4(a + x) - 3(x - a) = 0$
28. $-2(x - b) - (5a - x) = a + b$
29. $3x - 2(a - 3) = 4x - 6 - a$
30. $2(x - 3w) = -3(x + w)$
31. $3x + 2ab = 4x - 5ab$
32. $x - a = -x + a + 4b$

Solve each equation for y. See Examples 4 and 5.

33. $x + y = -9$
34. $3x + y = -5$
35. $x + y - 6 = 0$
36. $4x + y - 2 = 0$
37. $2x - y = 2$
38. $x - y = -3$
39. $3x - y + 4 = 0$
40. $-2x - y + 5 = 0$
41. $x + 2y = 4$
42. VIDEO $3x + 2y = 6$
43. $2x - 2y = 1$

44. $3x - 2y = -6$

45. $y + 2 = 3(x - 4)$

46. $y - 3 = -3(x - 1)$

47. $y - 1 = \frac{1}{2}(x - 2)$

48. $y - 4 = -\frac{2}{3}(x - 9)$

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

50. $\frac{x}{2} + \frac{y}{4} = \frac{1}{2}$

51. $y - 2 = \frac{3}{2}(x + 3)$

52. $y + 4 = \frac{2}{3}(x - 2)$

53. $y - \frac{1}{2} = -\frac{1}{4}\left(x - \frac{1}{2}\right)$

54. $y + \frac{1}{2} = -\frac{1}{3}\left(x + \frac{1}{2}\right)$

‹2› Finding the Value of a Variable

For each equation that follows, find y given that $x = 2$. See Example 6.

55. $y = 3x - 4$

56. $y = -2x + 5$

57. $3x - 2y = -8$

58. $4x + 6y = 8$

59. $\frac{3x}{2} - \frac{5y}{3} = 6$

60. $\frac{2y}{5} - \frac{3x}{4} = \frac{1}{2}$

61. $y - 3 = \frac{1}{2}(x - 6)$

62. $y - 6 = -\frac{3}{4}(x - 2)$

63. $y - 4.3 = 0.45(x - 8.6)$

64. $y + 33.7 = 0.78(x - 45.6)$

Fill in the tables using the given formulas.

65. $y = -3x + 30$

x	y
−10	
0	
10	
20	
30	

66. $y = 4x - 20$

x	y
−10	
−5	
0	
5	
10	

67. $F = \frac{9}{5}C + 32$

C	F
−10	
−5	
0	
40	
100	

68. $C = \frac{5}{9}(F - 32)$

F	C
−40	
14	
32	
59	
86	

69. $T = \frac{400}{R}$

R (mph)	T (hr)
10	
20	
40	
80	
100	

70. $R = \frac{100}{T}$

T (hr)	R (mph)
1	
5	
20	
50	
100	

71. $S = \frac{n(n+1)}{2}$

n	S
1	
2	
3	
4	
5	

72. $S = \frac{n(n+1)(2n+1)}{6}$

n	S
1	
2	
3	
4	
5	

‹3› Applications

Solve each of the following problems. Some geometric formulas that may be helpful can be found inside the front cover of this text. See Examples 7–9.

73. ***Finding the rate.*** A loan of $5000 is made for 3 years. Find the interest rate for simple interest amounts of $600, $700, and $800.

74. ***Finding the rate.*** A loan of $1000 is made for 7 years. Find the interest rate for simple interest amounts of $420, $455, and $472.50.

75. ***Finding the time.*** Kathy paid $500 in simple interest on a loan of $2500. If the annual interest rate was 5%, then what was the time?

76. ***Finding the time.*** Robert paid $240 in simple interest on a loan of $1000. If the annual interest rate was 8%, then what was the time?

77. ***Finding the length.*** The area of a rectangle is 28 square yards. Find the length if the width is 2 yards, 3 yards, or 4 yards.

78. ***Finding the width.*** The area of a rectangle is 60 square feet. Find the width if the length is 10 feet, 16 feet, or 18 feet.

79. ***Finding the length.*** If it takes 600 feet of wire fencing to fence a rectangular feed lot that has a width of 75 feet, then what is the length of the lot?

80. ***Finding the depth.*** If it takes 500 feet of fencing to enclose a rectangular lot that is 104 feet wide, then how deep is the lot?