LESSON 1-1

Identify a possible pattern. Use the pattern to write the next three numbers.

1. 13, 21, 29, 37, ▢, ▢, ▢, ...

2. 7, 8, 10, 13, ▢, ▢, ▢, ...

3. 165, 156, 147, 138, ▢, ▢, ▢, ...

4. 19, 33, 47, 61, ▢, ▢, ▢, ...

Identify a possible pattern. Use the pattern to draw the next three figures.

5.

6.
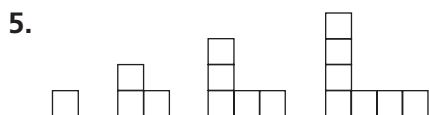
7. Make a table that shows the number of dots in each figure. Then tell how many dots are in the fifth figure of the pattern. Use drawings to justify your answer.

Figure 1   Figure 2   Figure 3

LESSON 1-2

Find each value.

8. 5^3

9. 7^3

10. 5^5

11. 6^5

12. 4^1

13. 8^2

14. 12^2

15. 100^3

Write each number using an exponent and the given base.

16. 121, base 11

17. 4,096, base 4

18. 216, base 6

19. 1,296, base 6

20. 256, base 2

21. 8,000, base 20

22. Maria decided to donate $1.00 to her favorite charity the first week of the month and to double the amount she donates each week. How much will she donate the sixth week?

LESSON 1-3

Choose the most appropriate metric unit for each measurement. Justify your answer.

23. The distance from home plate to first base

24. The height of a telephone pole

25. The mass of a marble

26. The capacity of a baby bottle

Convert each measure.

27. 8.9 m to millimeters

28. 56 mg to grams

29. 900 mL to liters

30. 2 L to milliliters

31. 150 m to kilometers

32. 0.002 kg to milligrams

33. Anthony and Melinda are drinking apple juice. Anthony has 300 mL left and Melinda has 0.09L. Who has the greater amount of juice? Use estimation to explain why your answer makes sense.

LESSON 1-4

Multiply.

34. $24 \cdot 10^3$

35. $20 \cdot 10^5$

36. $318 \cdot 10^3$

37. $2{,}180 \cdot 10^4$

38. $2{,}508 \cdot 10^5$

39. $5.555 \cdot 10^6$

Write each number in scientific notation.

40. $387{,}000$

41. $2{,}056{,}000$

42. $65{,}400{,}000$

43. $1{,}560$

44. $7{,}000{,}000{,}000$

45. $206.7 \cdot 10^3$

46. The distance from the Earth to the moon is about 2.48×10^5 miles. Write this distance in standard form.

47. New York City is about 1.0871×10^4 km from Tokyo, Japan. London, England, is about 9.581×10^3 km from Tokyo. Which city is closer to Tokyo?

LESSON 1-5

Simplify each expression.

48. $9 \div 3 + 6 \cdot 5$

49. $16 + (20 \div 5) - 3^2$

50. $(6 - 3)^3 \div 9 + 7$

51. $(4 \cdot 9) - (9 - 3)^2$

52. $5 + 9 \cdot 2^2 \div 6$

53. $6{,}842 - (5^3 \cdot 5 \cdot 10)$

54. Charlotte bought 4 shirts and 3 pairs of pants. She got the pants at a discount. Simplify the expression $4 \cdot 32 + 3 \cdot 25 - (3 \cdot 25) \div 5$ to find out how much she paid for the clothes.

LESSON 1-6

Tell which property is represented.

55. $9 \cdot 2 = 2 \cdot 9$

56. $9 + 0 = 9$

57. $12 \cdot 1 = 1 \cdot 12$

58. $1 \cdot (2 \cdot 3) = (1 \cdot 2) \cdot 3$

59. $xy = yx$

60. $(x + y) + z = x + (y + z)$

Simplify each expression. Justify each step.

61. $5 + 6 + 19$

62. $5 \cdot 10 \cdot 2$

63. $3 \cdot (5 \cdot 9)$

64. $(25 \cdot 8) \cdot 4$

65. $30 + (121 + 39)$

66. $125 \cdot (2 \cdot 3)$

Use the Distributive Property to find each product.

67. $8 \cdot (2 + 10)$

68. $3 \cdot (19 + 4)$

69. $(10 - 2) \cdot 7$

70. $15 \cdot (13 - 8)$

71. $(47 + 88) \cdot 4$

72. $5 \cdot (157 - 45)$

LESSON 1-7

Evaluate each expression for the given value of the variable.

73. $8k - 7$ for $k = 4$

74. $9n + 12$ for $n = 6$

75. $12t - 15$ for $t = 4$

76. $v \div 5 + v$ for $v = 20$

77. $3r - 20 \div r$ for $r = 5$

78. $5x^2 + 3x$ for $x = 3$

LESSON 1-8

Write each phrase as an algebraic expression.

79. 12 less than a number

80. the quotient of a number and 8

81. add 7 to 8 times a number

82. 6 times the sum of 13 and a number

83. A music store sells packages of guitar strings. David bought s strings for $24. Write an algebraic expression for the cost of one string.

LESSON 1-9

Simplify. Justify your steps using the Commutative, Associative, and Distributive Properties when necessary.

84. $5b + 3t + b$

85. $t + 3b + 3t + 3b + x$

86. $8g + 3g + 12$

87. $3u + 6 + 5k + u$

88. $11 + 5t^2 + t + 6t$

89. $y^3 + 3y + 6y^3$

90. Write an expression for the perimeter of the given figure. Then simplify the expression.

$n + 2$
n n
n
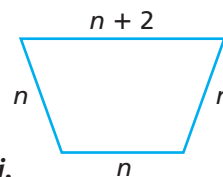
LESSON 1-10

Determine whether each number is a solution of $17 = 45 - j$.

91. 31

92. 28

93. 14

94. 22

Determine whether each number is a solution of $x + 23 = 51$.

95. 42

96. 31

97. 19

98. 28

99. Dano has 87 CDs. This is 12 more than Megan has. The equation $87 = c + 12$ can be used to represent the number of CDs that Megan has. Does Megan have 99, 85, or 75 CDs?

LESSON 1-11

Solve each equation. Check your answer.

100. $n - 22 = 16$

101. $y + 27 = 42$

102. $x - 81 = 14$

103. $t - 32 = 64$

104. $z + 39 = 72$

105. $a + 43 = 61$

106. Raquel is hiking a 9 mile trail in the Grand Canyon. She has already hiked 4 miles. How much farther does she have to hike?

LESSON 1-12

Solve each equation. Check your answer.

107. $20 = s \div 3$

108. $12y = 84$

109. $15 = \frac{n}{9}$

110. $\frac{m}{36} = 12$

111. $144 = 3p$

112. $72j = 360$

113. Adam is saving to buy a computer that costs $400 before school starts. If school starts in 8 weeks, how much will he need to save per week in order to have enough money?