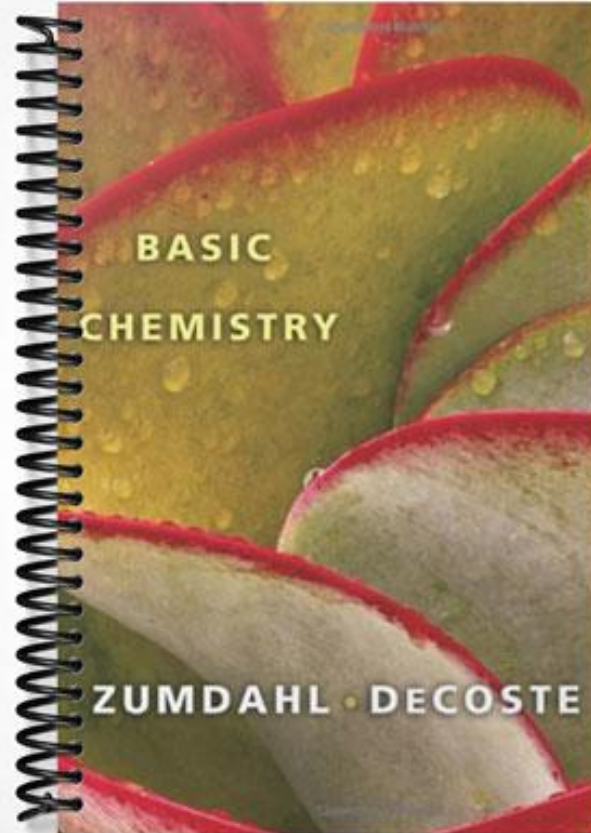


TEST BANK



7e

**BASIC
CHEMISTRY**

ZUMDAHL · DECOSTE

Chapter 02 - Measurements and Calculations

Student: _____

1. Express 1840000 in scientific notation.

- A. 5.41×10^{-8}
- B. 1.84×10^{-6}
- C. 1.84×10^6
- D. 184×10^6
- E. 184×10^4

2. Express 30523000 in scientific notation.

- A. 3×10^7
- B. 3.0523×10^7
- C. 305×10^7
- D. 30523×10^3
- E. 305230×10^7

3. Write 8,394 in standard scientific notation.

- A. 8394
- B. 8.394×10^{-3}
- C. 839.4×10^1
- D. 8.394×1000
- E. 8.394×10^3

4. The number 0.00003009 expressed in exponential notation is

- A. 3.009×10^{-5}
- B. 3.0×10^{-5}
- C. 3.009×10^5
- D. 3.009×10^{-4}
- E. 3.009

5. The number 0.002 expressed in exponential notation is

- A. 2×10^3
- B. 2×10^4
- C. 2×10^{-3}
- D. 2×10^{-4}
- E. none of these

6. The number 0.00215 expressed in exponential notation is

- A. 2.15×10^3
- B. 2.15×10^{-2}
- C. 215×10^3
- D. 2.15×10^2
- E. 2.15×10^{-3}

7. The number 0.005837 expressed in scientific notation is

- A. 5.84×10^3
- B. 5.837×10^3
- C. 5.84×10^{-3}
- D. 5.837×10^{-3}
- E. 5837×10^{-6}

8. The number 600,000 expressed in scientific notation is

- A. 6.0×10^5
- B. 6.0×10^{-5}
- C. 60×10^4
- D. 600×10^3
- E. 6×10^5

9. Express the number 178481 in scientific notation.

- A. 1.78481×10^{-5}
- B. 1.78481×10^5
- C. 1.78×10^5
- D. 178.481×10^3
- E. 1.8×10^{-5}

10. Express the number 0.00395 in scientific notation.

- A. 3.95×10^{-3}
- B. 3.95×10^3
- C. 0.395×10^{-3}
- D. 395×10^{-5}
- E. none of these

11. 1.8 kilograms contain this many grams.

- A. 1.8×10^3
- B. 1.8×10^2
- C. 1.8×10^1
- D. 1.8×10^{-2}
- E. 1.8×10^{-3}

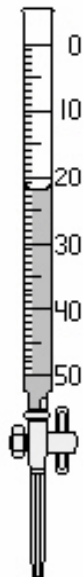
12. How many milliliters are in 0.070 L?
- A. 0.70 mL
 - B. 7.0 mL
 - C. 7.0×10^2 mL
 - D. 7.0×10^1 mL
 - E. 7.0×10^3 mL
13. The measurement 5.2×10^3 g also could be written as
- A. 5.2 g
 - B. 5.2 mg
 - C. 5.2 pg
 - D. 5.2 kg
 - E. 5.2 dg
14. How many millimeters are in 8.63×10^2 centimeters?
- A. 8.63×10^2 mm
 - B. 8.63×10^1 mm
 - C. 8.63×10^3 mm
 - D. 8.63 mm
 - E. 8.63×10^{-2} mm
15. Convert: 6.0 mm = _____ km.
- A. 6.0×10^{-6} km
 - B. 6.0×10^{-3} km
 - C. 6.0×10^3 km
 - D. 6.0×10^6 km
 - E. 6.0×10^2 km
16. Convert: 38.6 L = _____ mL.
- A. 3.86×10^3 mL
 - B. 3.86×10^4 mL
 - C. 3.86×10^{-1} mL
 - D. 3.86×10^{-2} mL
 - E. 3.86 mL

17. Convert: $3.44 \times 10^2 \text{ g} =$ _____ kg.
- A. $3.44 \times 10^5 \text{ kg}$
 - B. 3.44 kg
 - C. 0.344 kg
 - D. $3.44 \times 10^4 \text{ kg}$
 - E. 0.0344 kg
18. Convert: 65.1 cm = _____ m.
- A. $6.51 \times 10^3 \text{ m}$
 - B. $6.51 \times 10^4 \text{ m}$
 - C. 0.0651 m
 - D. 0.651 m
 - E. 6.51 m
19. 9.4 milliseconds is equal to how many seconds?
- A. $9.4 \times 10^3 \text{ s}$
 - B. $9.4 \times 10^2 \text{ s}$
 - C. $9.4 \times 10^{-3} \text{ s}$
 - D. $9.4 \times 10^{-2} \text{ s}$
 - E. 0.94 s
20. The fundamental unit of length in the metric system is the
- A. kilometer
 - B. meter
 - C. centimeter
 - D. gram
 - E. milliliter
21. The number of milligrams in 6.6 kg is
- A. $6.6 \times 10^3 \text{ mg}$
 - B. $6.6 \times 10^6 \text{ mg}$
 - C. $6.6 \times 10^{-3} \text{ mg}$
 - D. $6.6 \times 10^{-6} \text{ mg}$
 - E. $6.6 \times 10^2 \text{ mg}$

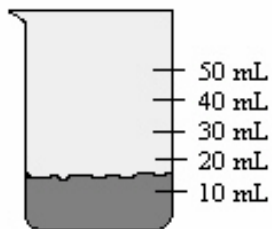
22. The SI prefix that corresponds to a factor of 10^{-2} is
- A. centi
 - B. deci
 - C. kilo
 - D. milli
 - E. none of these
23. Which metric prefix is used to designate 1/10?
- A. d
 - B. c
 - C. m
 - D. M
 - E. k
24. The number of milliliters in 0.0483 liter is
- A. 4.83×10^{-5} mL
 - B. 48.3 mL
 - C. 4.83 mL
 - D. 483 mL
 - E. 4.83×10^3 mL
25. Which of the following is an SI unit for expressing the mass of a block of Au?
- A. m
 - B. g
 - C. L
 - D. pound
26. A cubic centimeter (cm^3) is equivalent to what other metric volume unit?
- A. milliliter
 - B. liter
 - C. deciliter
 - D. centimeter
 - E. millimeter
27. Convert: $904.4 \text{ mm} = \underline{\hspace{2cm}}$ m.
- A. 9.044×10^5 m
 - B. 9.044×10^4 m
 - C. 9.044 m
 - D. 90.44 m
 - E. 0.9044 m

28. The number of cubic centimeters (cm^3) in 43.0 mL is
- A. 0.0430 cm^3
 - B. 4.30 cm^3
 - C. 43.0 cm^3
 - D. none of these
29. Using the rules of significant figures, calculate the following:
 $70 + 4.461$
- A. 70
 - B. 75
 - C. 74.46
 - D. 74.461
 - E. 74
30. Using the rules of significant figures, calculate the following:
 $13.4561 - 3.48$
- A. 9.98
 - B. 10
 - C. 9.9761
 - D. 9.976
 - E. 9
31. Using the rules of significant figures, calculate the following:
 $12.67 + 13.005 =$
- A. 25.675
 - B. 25
 - C. 20
 - D. 25.68
 - E. 26

32. Using zero as your reference point, how much liquid has left the buret? Use the correct number of significant figures.



- A. 20 mL
B. 22 mL
C. 22.0 mL
D. 38 mL
E. 38.0 mL
33. You take 20.0 mL of water from a graduated cylinder and add it to the beaker of water below. What is the new volume of water in the beaker?



- A. 40 mL
B. 40. mL
C. 35 mL
D. 35.0 mL
E. 25.0 mL

34. How many significant figures are in the number 1.89×10^3 ?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

35. The number 3.00183 rounded to four significant figures is

- A. 3.002
- B. 3.001
- C. 3.000
- D. 3.183
- E. none of these

36. How many significant figures are in the number 60.02×10^5 ?

- A. 2
- B. 3
- C. 4
- D. 5
- E. none of these

37. The number 14.809 rounded to three significant figures is

- A. 15.0
- B. 14.9
- C. 14.81
- D. 14.809
- E. 14.8

38. Round 23,456 to four significant figures.

39. Round 0.0004583 to three significant figures, and express it in scientific notation.

40. How many significant figures are in the number 34.00500?

- A. 3
- B. 4
- C. 5
- D. 6
- E. 7

41. How many significant figures are in the number 1000.0?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

42. How many significant figures are in the measurement 12.3004 g?

- A. 6
- B. 5
- C. 4
- D. 3
- E. 2

43. How many significant figures are in the number 1.20×10^3 ?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

44. In the sum of $54.34 + 45.66$, the number of significant figures is
- A. 2
 - B. 3
 - C. 4
 - D. 5
 - E. 6
45. How many significant figures are in the number 3.400?
- A. 1
 - B. 2
 - C. 3
 - D. 4
 - E. 5
46. The number 243.306 rounded off to five significant figures is
- A. 243.31
 - B. 243.36
 - C. 243.30
 - D. 243.00
 - E. none of these
47. A student finds that the weight of an empty beaker is 14.049 g. She places a solid in the beaker to give a combined mass of 14.142 g. To how many significant figures is the mass of the solid known?
- A. 2
 - B. 3
 - C. 1
 - D. 5
 - E. 4
48. What is the result of the following multiplication expressed in scientific notation to the correct number of significant figures?
 $(5.46 \times 10^3)(8.0 \times 10^{-3})$
- A. 4.4×10^1
 - B. 4.37×10^1
 - C. 4.3×10^{-1}
 - D. 4×10^1
 - E. 4.368×10^1

49. How many significant figures are in the number 19.8030?
- A. 6
 - B. 5
 - C. 4
 - D. 3
 - E. 2
50. How many significant figures are there in the result of the following calculation?
(4.321/2.8) ' (6.9234 ' 10⁵)
- A. 1
 - B. 2
 - C. 3
 - D. 4
 - E. 5
51. The result of the following calculation has how many significant figures?
(0.4333 J/g °C) (33.12°C – 31.12°C)(412.1 g)
- A. 1
 - B. 2
 - C. 3
 - D. 4
 - E. 5
52. How many significant figures are in the number 4.00700 ' 10¹³?
- A. 2
 - B. 4
 - C. 5
 - D. 6
 - E. none of these
53. How many significant figures are in the number 0.02020 ' 10¹⁵?
- A. 3
 - B. 4
 - C. 5
 - D. 6
 - E. 19
54. How many significant figures are in the measurement 0.2010 g?
- A. 1
 - B. 2
 - C. 3
 - D. 4
 - E. 5

55. The product of $0.1400 \cdot 6.02 \cdot 10^{23}$ will have how many significant figures?
- A. 2
 - B. 3
 - C. 23
 - D. 10^{23}
 - E. 7
56. How many significant figures should there be in the answer when you divide 4.1 by 7.464?
- A. 7
 - B. 4
 - C. 3
 - D. 2
 - E. 1
57. How many significant figures are in the number 0.00204?
- A. 3
 - B. 5
 - C. 2
 - D. 6
 - E. 4
58. How many significant figures are in the number 123.00015?
- A. 5
 - B. 6
 - C. 7
 - D. 8
 - E. 9
59. How many significant figures are in the number 0.0040090?
- A. 8
 - B. 7
 - C. 6
 - D. 5
 - E. 4
60. How many significant figures are in the number 10.050?
- A. 1
 - B. 2
 - C. 3
 - D. 4
 - E. 5

61. Write the number 345.626 in scientific notation.

- A. 345.626
- B. 3.45626×10^{-2}
- C. 34.5626×10^2
- D. 0.345626×10^3
- E. 3.45626×10^2

62. Write the number 0.0005020 in scientific notation.

- A. 5.020×10^4
- B. 0.5020×10^{-3}
- C. 5.020×10^{-4}
- D. 50.20×10^{-5}
- E. none of these

63. Convert 943.4 m to decimeters.

- A. 9.434×10^4 dm
- B. 94.34 dm
- C. 9.434 dm
- D. 9.434×10^3 dm
- E. none of these

64. Convert 949.0 L to milliliters.

- A. 0.9490 mL
- B. 9.490 mL
- C. 949.0 mL
- D. 9.490×10^3 mL
- E. 9.490×10^5 mL

65. Convert 777.5 qt to milliliters (1 L = 1.060 qt).

- A. 7.775×10^5 mL
- B. 7.335×10^5 mL
- C. 8.242×10^5 mL
- D. 733.5 mL
- E. none of these

66. Convert 9.75 kg to pounds (1 lb = 453.6 g).
- A. 21.5 lb
 - B. 2.15×10^{-2} lb
 - C. 4.42×10^3 lb
 - D. 4.42 lb
 - E. 4.42×10^6 lb
67. Convert 316718.0 mm to kilometers.
- A. 3.167180 km
 - B. 0.3167180 km
 - C. 316.7180 km
 - D. 3167.180 km
 - E. 3.167180×10^{11} km
68. Convert 0.9309 L to centiliters.
- A. 0.009309 cL
 - B. 930.9 cL
 - C. 93.09 cL
 - D. 0.09309 cL
 - E. 9.309 cL
69. Convert 643.5 mi to kilometers (1 m = 1.094 yd; 1 mi = 1760. yd).
- A. 4.000×10^{-4} km
 - B. 1.035×10^6 km
 - C. 704.0 km
 - D. 3.656×10^{-1} km
 - E. 1.035×10^3 km
70. Convert 17.2 cm to inches (2.54 cm = 1 in).
- A. 43.7 in
 - B. 4.37 in
 - C. 6.77 in
 - D. 67.7 in
 - E. 0.677 in
71. Convert 0.054 ft^3 to liters ($28.32 \text{ L} = 1 \text{ ft}^3$).
- A. 1.9×10^{-3} L
 - B. 0.15 L
 - C. 15 L
 - D. 1.5×10^{-2} L
 - E. 1.5 L

72. Convert 9.60 kg to pounds (1 kg = 2.205 lb).

- A. 21.2 lb
- B. 4.35 lb
- C. 2.12 lb
- D. 43.5 lb
- E. 0.435 lb

73. Convert: 0.326 mm = _____ m.

- A. 3.26×10^{-4} m
- B. 3.26×10^{-3} m
- C. 3.26×10^2 m
- D. 32.6 m
- E. 3.26×10^{-5} m

74. Convert: 0.00668 cm = _____ mm.

- A. 6.68 mm
- B. 6.68×10^{-2} mm
- C. 0.668 mm
- D. 6.68×10^{-4} mm
- E. 6.68×10^{-5} mm

75. Convert: 6.76 qt = _____ mL.

- A. 7.17 mL
- B. 7.17×10^3 mL
- C. 6.38×10^3 mL
- D. 6.38 mL
- E. 1.19×10^4 mL

76. Convert: 24.0 cc = _____ mL.

- A. 240 mL
- B. 2.40×10^3 mL
- C. 2.40 mL
- D. 24.0 mL
- E. 0.240 mL

77. Convert: 6.28 mL = _____ qt.

- A. 6.66 mL
- B. 5.92 mL
- C. 5.92×10^3 mL
- D. 1.11×10^4 mL
- E. 6.66×10^{-3} mL

78. Convert: 828.6 qt = _____ mL.

- A. 8.286×10^5 mL
- B. 878.3 mL
- C. 8.783×10^{-1} mL
- D. 1.458×10^6 mL
- E. 7.817×10^5 mL

79. Convert: 2.80 in = _____ mm.

- A. 71.1 mm
- B. 7.11 mm
- C. 1.102 mm
- D. 0.71 mm
- E. 711 mm

80. Convert: 88.0 mg = _____ lb.

- A. 1.94×10^2 lb
- B. 8.80×10^{-5} lb
- C. 3.99×10^7 lb
- D. 3.88×10^{-4} lb
- E. 1.94×10^{-4} lb

81. Convert 81.0°F to kelvins.

- A. 300.2 K
- B. 354.0 K
- C. -192.0 K
- D. -245.8 K
- E. 476.4 K

82. Convert: 29.3°C = _____ °F.

- A. 84.7°F
- B. 52.7°F
- C. 20.7°F
- D. 48.3°F
- E. -15.7°F

83. Convert: $366.2\text{ K} = \underline{\hspace{2cm}}\text{ }^{\circ}\text{C}$.

- A. 639.2°C
- B. 93.2°C
- C. 691.2°C
- D. 235.4°C
- E. 203.4°C

84. Convert: $15.3^{\circ}\text{F} = \underline{\hspace{2cm}}\text{ }^{\circ}\text{C}$.

- A. 26.28°C
- B. -30.06°C
- C. -9.28°C
- D. 85.14°C
- E. 288.3°C

85. 485.5 K equals

- A. 212.5°F
- B. 873.9°C
- C. 758.5°F
- D. 212.5°C
- E. 758.5°C

86. What Kelvin temperature reading equals 61.2°F ?

- A. -256.8 K
- B. 325.6 K
- C. -220.4 K
- D. 324.8 K
- E. 289.2 K

87. Convert: $-10.5^{\circ}\text{F} = \underline{\hspace{2cm}}\text{ }^{\circ}\text{C}$.

- A. -23.6°C
- B. 11.9°C
- C. -76.5°C
- D. 38.7°C
- E. 262.5°C

88. Convert: $-12.2^{\circ}\text{C} = \underline{\hspace{2cm}}\text{ }^{\circ}\text{F}$.

- A. -54.0°F
- B. 10.0°F
- C. 25.2°F
- D. -38.8°F
- E. -22.0°F

89. 232.0°F is equivalent to

- A. 146.7°C
- B. 111.1°C
- C. 360.0°C
- D. 475.2°C
- E. 128.9°C

90. Convert: 18.6°F = _____ °C.

- A. 28.11°C
- B. -24.12°C
- C. 91.08°C
- D. -7.44°C
- E. 10.33°C

91. What is the Celsius equivalent of 436.5 K?

- A. 709.5°C
- B. 817.7°C
- C. 224.7°C
- D. 785.7°C
- E. 163.5°C

92. Convert: -47.9°C = _____ °F.

- A. -118.2°F
- B. 5.4°F
- C. -54.2°F
- D. -58.6°F
- E. -86.2°F

93. Convert: 91.2°C = _____ K.

- A. -181.8 K
- B. 181.8 K
- C. 164.2 K
- D. 364.2 K
- E. 32.9 K

94. Cesium melts at 302 K and boils at 944 K. What would be the physical state of cesium at 25°C?
95. If 1.000 kg equals 2.205 lb, what is the mass in pounds of a human who weighs 51.35 kg?
- A. 113.2 lb
 - B. 23.29 lb
 - C. 93.2 lb
 - D. 53.56 lb
 - E. none of these
96. The Celsius equivalent of 62.2 K is
- A. 335.2°C
 - B. 62.2°C
 - C. 162.2°C
 - D. -210.8°C
 - E. 144.0°C
97. 18.4°C is equal to
- A. 65.1°F
 - B. 1.1°F
 - C. -254.6K
 - D. -7.6°F
 - E. none of these
98. Convert: 21.9°C = _____ °F.
- A. 7.4°F
 - B. 44.2°F
 - C. -19.8°F
 - D. 39.4°F
 - E. 71.4°F

99. Convert: $-97.7^{\circ}\text{C} = \underline{\hspace{2cm}}$ K.

- A. -370.7 K
- B. 370.7 K
- C. 175.3 K
- D. 175.9 K
- E. 54.3 K

100. Density is an example of a

- A. chemical property
- B. physical property
- C. qualitative property
- D. chemical change
- E. physical change

101. Water has a density of 1.0 g/mL. Which of these objects will float in water?

Object I: mass = 50.0 g; volume = 69.4 mL

Object II: mass = 60.9 g; volume = 54.7 mL

Object III: mass = 100.0 g; volume = 40.0 mL

- A. I only
- B. I, III
- C. II only
- D. II, III
- E. III only

102. Calculate the mass of a rectangular solid that has a density of 3.96 g/cm³ and measures 2.50 cm by 1.80 cm by 3.00 cm.

- A. 3.41 g
- B. 53.5 g
- C. 9.90 g
- D. 28.9 g
- E. 56.5 g

103. Find the volume of an object that has a density of 3.14 g/mL and a mass of 94.7 g.

- A. 30.2 mL
- B. 3.32×10^{-2} mL
- C. 297 mL
- D. 3.02×10^{-2} mL
- E. 2.97×10^5 mL

104. An experiment requires 66.6 g of ethyl alcohol (density = 0.790 g/mL). What volume, in liters, will be required?
- A. 5.26×10^{-2} L
 - B. 1.19×10^{-5} L
 - C. 8.43e4 L
 - D. 8.43×10^{-2} L
 - E. 52.6 L
105. At 20°C the density of mercury is 13.6 g/cm³. What is the mass of 97.8 mL of mercury at 20°C?
- A. 1.33×10^3 g
 - B. 7.19 g
 - C. 1.00 g/mL
 - D. 0.139 g
 - E. none of these
106. If a 100₃-g sample of platinum metal has a volume of 4.671 mL, what is the density of platinum in g/cm³?
- A. 21.4 g/cm³
 - B. 2.14 g/cm³
 - C. 0.0467 g/cm³
 - D. 467 g/cm³
 - E. none of these
107. An experiment requires 74.2 mL of ethyl alcohol. If the density of ethyl alcohol is 0.790 g/cm³, what is the mass of 74.2 mL of ethyl alcohol?
- A. 93.9 g
 - B. 10.6 g
 - C. 58.6 g
 - D. 5.86×10^{-2} g
 - E. none of these
108. If a 100.-g sample of a metal has a volume of 8.65 mL, what is the density of the metal?
- A. 11.6 g/mL
 - B. 1.16 g/mL
 - C. 0.0865 g/mL
 - D. 9 g/mL
 - E. none of these

109. The volume (in milliliters) occupied by 41.9 g of mercury (density = 13.6 g/mL) is
- A. 570 mL
 - B. 3.08 mL
 - C. 0.325 mL
 - D. 28.3 mL
 - E. none of these
110. The density of copper is 8.92 g/mL. The mass of a piece of copper that has a volume of 10.4 mL is
- A. 0.928 g
 - B. 928 g
 - C. 92.8 g
 - D. 9.28×10^{-2} g
 - E. none of these
111. The density of gold is 19.3 g/mL. What is the volume of a gold nugget that weighs 68.7 g?
- A. 1.33×10^3 mL
 - B. 3.56 mL
 - C. 0.281 mL
 - D. 49.4 mL
 - E. none of these
112. Aluminum has a density of 2.70 g/cm³. What is the mass of a rectangular block of aluminum measuring 11.1 cm by 22.2 cm by 34.5 cm?
- A. 183 kg
 - B. 3.15×10^3 kg
 - C. 0.318 kg
 - D. 23.0 kg
 - E. none of these
113. An object has a mass of 40.1 g and occupies a volume of 7.67 mL. The density of this object is
- A. 308 g/mL
 - B. 0.191 g/mL
 - C. 5.23 g/mL
 - D. too low to measure
 - E. 40.1 g/mL
114. What volume would be occupied by a piece of aluminum (density = 2.70 g/mL) weighing 98.0 g?
- A. 265 mL
 - B. 2.76×10^{-2} mL
 - C. 36.3 mL
 - D. 3.63 mL
 - E. none of these

115. A graduated cylinder contains 20.0 mL of water. An irregularly shaped object is placed in the cylinder, and the water level rises to the 31.2-mL mark. If the object has a mass of 80.4 g, what is its density?
- A. 7.18 g/mL
 - B. 0.139 g/mL
 - C. 2.58 g/mL
 - D. 4.02 g/mL
 - E. none of these
116. A piece of an unknown metal weighs 400.1 g and occupies a volume of 72.2 mL. What is the density of this metal?
- A. 2.89×10^4 g/mL
 - B. 5.54 g/mL
 - C. 0.180 g/mL
 - D. 55.4 g/mL
 - E. none of these
117. A sample of an unknown metal (density = 4.920 g/mL) weighs 891.8 g. What is the volume of this piece of metal?
- A. 4.388×10^3 mL
 - B. 5.517×10^{-3} mL
 - C. 181.3 mL
 - D. 1.813×10^5 mL
 - E. none of these
118. The density of an object that has a mass of 8.07 g and occupies a volume of 1.20 mL equals
- A. 8.07 g/mL
 - B. 1.20 g/mL
 - C. 6.73 g/mL
 - D. 0.15 g/mL
 - E. 9.68 g/mL
119. An empty graduated cylinder weighs 55.26 g. When filled with 92.6 mL of an unknown liquid, it weighs 92.39 g. The density of the unknown liquid is
- A. 37.13 g/mL
 - B. 92.6 g/mL
 - C. 0.401 g/mL
 - D. 2.49 g/mL
 - E. 3.44×10^3 g/mL

120. A solid object with a volume of 5.62 mL weighs 108 g. Would this object float or sink in mercury? Explain. (Density of Hg = 13.6 g/mL.)
121. Copper has a density of 8.96 g/cm^3 . If a cylinder of copper weighing 34.94 g is dropped into a graduated cylinder containing 20.00 mL of water, what will be the new water level?
- A. 3.90 mL
 - B. 0.256 mL
 - C. 16.10 mL
 - D. 23.90 mL
 - E. 32.86 mL
122. A chemist needs 18.3 g of bromine for an experiment. What volume should she use? (Density of bromine = 3.12 g/cm^3 .)
- A. 0.170 mL
 - B. 18.3 mL
 - C. 57.1 mL
 - D. 15.2 mL
 - E. 5.87 mL
123. A chunk of sulfur has a volume of 5.95 cm^3 . What is the mass of this sulfur? (Density of sulfur = 2.07 g/cm^3 .)
- A. 0.348 g
 - B. 5.95 g
 - C. 2.87 g
 - D. 3.88 g
 - E. 12.3 g
124. One side of a backyard fence measures 314 inches in length. How many feet does this represent?
- A. 26.2 ft
 - B. 3768. ft
 - C. 0.0382 ft
 - D. 124. ft
 - E. 798. ft

125. A golfer putted a golf ball 7.7 ft across a green. How many inches does this represent?

- A. 0.64 in
- B. 3.0 in
- C. 92. in
- D. 1.6 in
- E. 0.33 in

126. How many centimeters are in 15.1 inches?

- A. 5.94 cm
- B. 0.168 cm
- C. 17.6 cm
- D. 38.4 cm
- E. 181. cm

127. An iron sample has a mass of 2.74 lb. What is the mass of this sample in grams?

- A. 6.04 g
- B. 1.24×10^3 g
- C. 1.24×10^{-3} g
- D. 6.04×10^3 g
- E. 2.74×10^3 g

128. A dining room table measures 5.8 feet in length. How many inches does this represent?

- A. 0.48 in
- B. 2.1 in
- C. 18. in
- D. 2.3 in
- E. 70. in

129. How many cups are in a 64-oz pitcher of lemonade? (8 fluid oz = 1 cup)

- A. 512 cups
- B. 0.13 cup
- C. 72 cups
- D. 56 cups
- E. 8 cups

130. Perform the following conversion: $5.39 \text{ m/s} = \underline{\hspace{2cm}} \text{ km/h}$

- A. 19.4 km/h
- B. 0.323 km/h
- C. 1.50 km/h
- D. 668 km/h
- E. 186 km/h

131. Perform the following conversion: $6.41 \text{ m/s} = \underline{\hspace{2cm}} \text{ mi/h}$
- A. 0.349 mi/h
 - B. 14.3 mi/h
 - C. 251 mi/h
 - D. 239 mi/h
 - E. 12.8 mi/h
132. Baking soda and vinegar are mixed in a balloon. A gas is produced, and the balloon expands to a volume of 2.59 L. What is the volume of the balloon in cm^3 ?
- A. $2.59 \times 10^3 \text{ cm}^3$
 - B. 25.9 cm^3
 - C. 0.259 cm^3
 - D. $2.59 \times 10^{-3} \text{ cm}^3$
 - E. $2.59 \times 10^2 \text{ cm}^3$
133. An object is 149.7 inches in height. Express this height in centimeters.
- A. 58.94 cm
 - B. 0.01697 cm
 - C. 12.48 cm
 - D. 380.2 cm
 - E. 152.2 cm
134. An object is 153.8 inches in height. Express this height in feet.
- A. 0.07802 ft
 - B. 1846 ft
 - C. 60.55 ft
 - D. 390.7 ft
 - E. 12.82 ft
135. A toy measures 39.1 cm in length. How many inches does this represent?
- A. 15.4 in
 - B. 99.3 in
 - C. 0.0650 in
 - D. 3.26 in
 - E. 469 in
136. A runner jogs 5.0 miles every morning. How many kilometers does this represent?
- A. 3.1 km
 - B. 8.0 km
 - C. 60 km
 - D. 0.32 km
 - E. 3.4 km

137. How many quarts are in a 11.6-gal cooler of fruit punch? (1 gal = 4 qt)
- A. 2.90 qt
 - B. 0.345 qt
 - C. 15.6 qt
 - D. 7.6 qt
 - E. 46.4 qt
138. A car tire has a pressure of 39 psi (pounds per square inch). What is the pressure of the tire in atm (atmospheres)? (1 atm = 14.70 psi)
- A. 2.7 atm
 - B. 0.38 atm
 - C. 54. atm
 - D. 24. atm
 - E. 573. atm
139. How many liters are in a 29-oz bottle of pop?
(1 qt = 32 fluid oz)
(1 L = 1.0567 qt)
- A. 0.91 L
 - B. 0.96 L
 - C. 1.2 L
 - D. 0.86 L
 - E. 1.0 L
140. Your friend is 5.0 ft, 9.8 in tall. What is your friend's height in meters?
- A. 0.38 m
 - B. 1.8 m
 - C. 38. m
 - D. 27. m
 - E. 70. m
141. A cat is 7.1 lb. What is the mass of the cat in kilograms? (1 kg = 2.2046 lb)
- A. 16. kg
 - B. 0.31 kg
 - C. 3.2 kg
 - D. 9.3 kg
 - E. 7.1 kg

142. A walker travels a distance of 1.2 miles. How many inches did the walker travel?

(1 mi = 5280. ft)

(1 ft = 12 in)

- A. 6.3×10^3 in
- B. 5.3×10^2 in
- C. 14. in
- D. 10.0 in
- E. 7.6×10^4 in

143. A person has a mass of 9.82×10^4 g. What is this person's mass in pounds?

(1 kg = 2.2046 lb)

- A. 2.16×10^5 lb
- B. 4.45×10^4 lb
- C. 216. lb
- D. 98.2 lb
- E. 982. lb

144. The volume of a helium balloon is 2.1 L. What is this volume in cm^3 ? (1 L = 1 dm^3)

- A. 21. cm^3
- B. $2.1 \times 10^3 \text{ cm}^3$
- C. $2.1 \times 10^2 \text{ cm}^3$
- D. 0.21 cm^3
- E. $2.1 \times 10^4 \text{ cm}^3$

Chapter 02 - Measurements and Calculations **Key**

- Express 1840000 in scientific notation.
A. 5.41×10^{-8}
B. 1.84×10^{-6}
C. 1.84×10^6
D. 184×10^6
E. 184×10^4
- Express 30523000 in scientific notation.
A. 3×10^7
B. 3.0523×10^7
C. 305×10^7
D. 30523×10^3
E. 305230×10^7
- Write 8,394 in standard scientific notation.
A. 8394
B. 8.394×10^{-3}
C. 839.4×10^1
D. 8.394×1000
E. 8.394×10^3
- The number 0.00003009 expressed in exponential notation is
A. 3.009×10^{-5}
B. 3.0×10^{-5}
C. 3.009×10^5
D. 3.009×10^{-4}
E. 3.009
- The number 0.002 expressed in exponential notation is
A. 2×10^3
B. 2×10^4
C. 2×10^{-3}
D. 2×10^{-4}
E. none of these

6. The number 0.00215 expressed in exponential notation is

- A. 2.15×10^3
- B. 2.15×10^{-2}
- C. 215×10^3
- D. 2.15×10^2
- E.** 2.15×10^{-3}

7. The number 0.005837 expressed in scientific notation is

- A. 5.84×10^3
- B. 5.837×10^3
- C. 5.84×10^{-3}
- D.** 5.837×10^{-3}
- E. 5837×10^{-6}

8. The number 600,000 expressed in scientific notation is

- A. 6.0×10^5
- B. 6.0×10^{-5}
- C. 60×10^4
- D. 600×10^3
- E.** 6×10^5

9. Express the number 178481 in scientific notation.

- A. 1.78481×10^{-5}
- B.** 1.78481×10^5
- C. 1.78×10^5
- D. 178.481×10^3
- E. 1.8×10^{-5}

10. Express the number 0.00395 in scientific notation.

- A.** 3.95×10^{-3}
- B. 3.95×10^3
- C. 0.395×10^{-3}
- D. 395×10^{-5}
- E. none of these

11. 1.8 kilograms contain this many grams.

- A.** 1.8×10^3
- B. 1.8×10^2
- C. 1.8×10^1
- D. 1.8×10^{-2}
- E. 1.8×10^{-3}

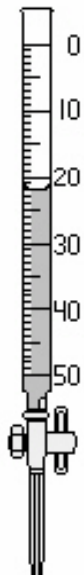
12. How many milliliters are in 0.070 L?
- A. 0.70 mL
 - B. 7.0 mL
 - C. 7.0×10^2 mL
 - D.** 7.0×10^1 mL
 - E. 7.0×10^3 mL
13. The measurement 5.2×10^3 g also could be written as
- A. 5.2 g
 - B. 5.2 mg
 - C. 5.2 pg
 - D.** 5.2 kg
 - E. 5.2 dg
14. How many millimeters are in 8.63×10^2 centimeters?
- A. 8.63×10^2 mm
 - B. 8.63×10^1 mm
 - C.** 8.63×10^3 mm
 - D. 8.63 mm
 - E. 8.63×10^{-2} mm
15. Convert: 6.0 mm = _____ km.
- A.** 6.0×10^{-6} km
 - B. 6.0×10^{-3} km
 - C. 6.0×10^3 km
 - D. 6.0×10^6 km
 - E. 6.0×10^2 km
16. Convert: 38.6 L = _____ mL.
- A. 3.86×10^3 mL
 - B.** 3.86×10^4 mL
 - C. 3.86×10^{-1} mL
 - D. 3.86×10^{-2} mL
 - E. 3.86 mL

17. Convert: $3.44 \times 10^2 \text{ g} = \underline{\hspace{2cm}}$ kg.
- A. $3.44 \times 10^5 \text{ kg}$
 - B. 3.44 kg
 - C.** 0.344 kg
 - D. $3.44 \times 10^4 \text{ kg}$
 - E. 0.0344 kg
18. Convert: 65.1 cm = $\underline{\hspace{2cm}}$ m.
- A. $6.51 \times 10^3 \text{ m}$
 - B. $6.51 \times 10^4 \text{ m}$
 - C. 0.0651 m
 - D.** 0.651 m
 - E. 6.51 m
19. 9.4 milliseconds is equal to how many seconds?
- A. $9.4 \times 10^3 \text{ s}$
 - B. $9.4 \times 10^2 \text{ s}$
 - C.** $9.4 \times 10^{-3} \text{ s}$
 - D. $9.4 \times 10^{-2} \text{ s}$
 - E. 0.94 s
20. The fundamental unit of length in the metric system is the
- A. kilometer
 - B.** meter
 - C. centimeter
 - D. gram
 - E. milliliter
21. The number of milligrams in 6.6 kg is
- A. $6.6 \times 10^3 \text{ mg}$
 - B.** $6.6 \times 10^6 \text{ mg}$
 - C. $6.6 \times 10^{-3} \text{ mg}$
 - D. $6.6 \times 10^{-6} \text{ mg}$
 - E. $6.6 \times 10^2 \text{ mg}$

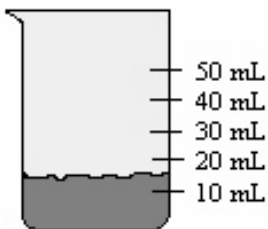
22. The SI prefix that corresponds to a factor of 10^{-2} is
- A.** centi
 - B. deci
 - C. kilo
 - D. milli
 - E. none of these
23. Which metric prefix is used to designate 1/10?
- A.** d
 - B. c
 - C. m
 - D. M
 - E. k
24. The number of milliliters in 0.0483 liter is
- A. 4.83×10^{-5} mL
 - B.** 48.3 mL
 - C. 4.83 mL
 - D. 483 mL
 - E. 4.83×10^3 mL
25. Which of the following is an SI unit for expressing the mass of a block of Au?
- A. m
 - B.** g
 - C. L
 - D. pound
26. A cubic centimeter (cm^3) is equivalent to what other metric volume unit?
- A.** milliliter
 - B. liter
 - C. deciliter
 - D. centimeter
 - E. millimeter
27. Convert: $904.4 \text{ mm} = \underline{\hspace{2cm}}$ m.
- A. 9.044×10^5 m
 - B. 9.044×10^4 m
 - C. 9.044 m
 - D. 90.44 m
 - E.** 0.9044 m

28. The number of cubic centimeters (cm^3) in 43.0 mL is
- A. 0.0430 cm^3
 - B. 4.30 cm^3
 - C. 43.0 cm^3**
 - D. none of these
29. Using the rules of significant figures, calculate the following:
 $70 + 4.461$
- A. 70**
 - B. 75
 - C. 74.46
 - D. 74.461
 - E. 74
30. Using the rules of significant figures, calculate the following:
 $13.4561 - 3.48$
- A. 9.98**
 - B. 10
 - C. 9.9761
 - D. 9.976
 - E. 9
31. Using the rules of significant figures, calculate the following:
 $12.67 + 13.005 =$
- A. 25.675
 - B. 25
 - C. 20
 - D. 25.68**
 - E. 26

32. Using zero as your reference point, how much liquid has left the buret? Use the correct number of significant figures.



- A. 20 mL
B. 22 mL
C. 22.0 mL
D. 38 mL
E. 38.0 mL
33. You take 20.0 mL of water from a graduated cylinder and add it to the beaker of water below. What is the new volume of water in the beaker?



- A. 40 mL
B. 40. mL
C. 35 mL
D. 35.0 mL
E. 25.0 mL

34. How many significant figures are in the number 1.89×10^3 ?
- A. 1
 - B. 2
 - C. 3**
 - D. 4
 - E. 5
35. The number 3.00183 rounded to four significant figures is
- A. 3.002**
 - B. 3.001
 - C. 3.000
 - D. 3.183
 - E. none of these
36. How many significant figures are in the number 60.02×10^5 ?
- A. 2
 - B. 3
 - C. 4**
 - D. 5
 - E. none of these
37. The number 14.809 rounded to three significant figures is
- A. 15.0
 - B. 14.9
 - C. 14.81
 - D. 14.809
 - E. 14.8**
38. Round 23,456 to four significant figures.
- 23,460
39. Round 0.0004583 to three significant figures, and express it in scientific notation.
- 4.58×10^{-4}

40. How many significant figures are in the number 34.00500?
- A. 3
 - B. 4
 - C. 5
 - D. 6
 - E. 7**
41. How many significant figures are in the number 1000.0?
- A. 1
 - B. 2
 - C. 3
 - D. 4
 - E. 5**
42. How many significant figures are in the measurement 12.3004 g?
- A. 6**
 - B. 5
 - C. 4
 - D. 3
 - E. 2
43. How many significant figures are in the number 1.20×10^3 ?
- A. 1
 - B. 2
 - C. 3**
 - D. 4
 - E. 5
44. In the sum of $54.34 + 45.66$, the number of significant figures is
- A. 2
 - B. 3
 - C. 4
 - D. 5**
 - E. 6
45. How many significant figures are in the number 3.400?
- A. 1
 - B. 2
 - C. 3
 - D. 4**
 - E. 5

46. The number 243.306 rounded off to five significant figures is
- A. 243.31
 - B. 243.36
 - C. 243.30
 - D. 243.00
 - E. none of these
47. A student finds that the weight of an empty beaker is 14.049 g. She places a solid in the beaker to give a combined mass of 14.142 g. To how many significant figures is the mass of the solid known?
- A. 2
 - B. 3
 - C. 1
 - D. 5
 - E. 4
48. What is the result of the following multiplication expressed in scientific notation to the correct number of significant figures?
 $(5.46 \times 10^3)(8.0 \times 10^{-3})$
- A. 4.4×10^1
 - B. 4.37×10^1
 - C. 4.3×10^{-1}
 - D. 4×10^1
 - E. 4.368×10^1
49. How many significant figures are in the number 19.8030?
- A. 6
 - B. 5
 - C. 4
 - D. 3
 - E. 2
50. How many significant figures are there in the result of the following calculation?
 $(4.321/2.8) + (6.9234 \times 10^5)$
- A. 1
 - B.** 2
 - C. 3
 - D. 4
 - E. 5

51. The result of the following calculation has how many significant figures?
(0.4333 J/g °C) (33.12°C – 31.12°C)(412.1 g)
- A. 1
 - B. 2
 - C. 3**
 - D. 4
 - E. 5
52. How many significant figures are in the number 4.00700×10^{13} ?
- A. 2
 - B. 4
 - C. 5
 - D. 6**
 - E. none of these
53. How many significant figures are in the number 0.02020×10^{15} ?
- A. 3
 - B. 4**
 - C. 5
 - D. 6
 - E. 19
54. How many significant figures are in the measurement 0.2010 g?
- A. 1
 - B. 2
 - C. 3
 - D. 4**
 - E. 5
55. The product of $0.1400 \times 6.02 \times 10^{23}$ will have how many significant figures?
- A. 2
 - B. 3**
 - C. 23
 - D. 10^{23}
 - E. 7
56. How many significant figures should there be in the answer when you divide 4.1 by 7.464?
- A. 7
 - B. 4
 - C. 3
 - D. 2**
 - E. 1

57. How many significant figures are in the number 0.00204?
- A.** 3
 - B. 5
 - C. 2
 - D. 6
 - E. 4
58. How many significant figures are in the number 123.00015?
- A. 5
 - B. 6
 - C. 7
 - D.** 8
 - E. 9
59. How many significant figures are in the number 0.0040090?
- A. 8
 - B. 7
 - C. 6
 - D.** 5
 - E. 4
60. How many significant figures are in the number 10.050?
- A. 1
 - B. 2
 - C. 3
 - D. 4
 - E.** 5
61. Write the number 345.626 in scientific notation.
- A. 345.626
 - B. 3.45626×10^{-2}
 - C. 34.5626×10^2
 - D. 0.345626×10^3
 - E.** 3.45626×10^2
62. Write the number 0.0005020 in scientific notation.
- A. 5.020×10^4
 - B. 0.5020×10^{-3}
 - C.** 5.020×10^{-4}
 - D. 50.20×10^{-5}
 - E. none of these

63. Convert 943.4 m to decimeters.
- A. 9.434×10^4 dm
 - B. 94.34 dm
 - C. 9.434 dm
 - D.** 9.434×10^3 dm
 - E. none of these
64. Convert 949.0 L to milliliters.
- A. 0.9490 mL
 - B. 9.490 mL
 - C. 949.0 mL
 - D. 9.490×10^3 mL
 - E.** 9.490×10^5 mL
65. Convert 777.5 qt to milliliters (1 L = 1.060 qt).
- A. 7.775×10^5 mL
 - B.** 7.335×10^5 mL
 - C. 8.242×10^5 mL
 - D. 733.5 mL
 - E. none of these
66. Convert 9.75 kg to pounds (1 lb = 453.6 g).
- A.** 21.5 lb
 - B. 2.15×10^{-2} lb
 - C. 4.42×10^3 lb
 - D. 4.42 lb
 - E. 4.42×10^6 lb
67. Convert 316718.0 mm to kilometers.
- A. 3.167180 km
 - B.** 0.3167180 km
 - C. 316.7180 km
 - D. 3167.180 km
 - E. 3.167180×10^{11} km

68. Convert 0.9309 L to centiliters.
- A. 0.009309 cL
 - B. 930.9 cL
 - C. 93.09 cL**
 - D. 0.09309 cL
 - E. 9.309 cL
69. Convert 643.5 mi to kilometers (1 m = 1.094 yd; 1 mi = 1760. yd).
- A. 4.000×10^{-4} km
 - B. 1.035×10^6 km
 - C. 704.0 km
 - D. 3.656×10^{-1} km
 - E. 1.035×10^3 km**
70. Convert 17.2 cm to inches (2.54 cm = 1 in).
- A. 43.7 in
 - B. 4.37 in
 - C. 6.77 in**
 - D. 67.7 in
 - E. 0.677 in
71. Convert 0.054 ft^3 to liters ($28.32 \text{ L} = 1 \text{ ft}^3$).
- A. 1.9×10^{-3} L
 - B. 0.15 L
 - C. 15 L
 - D. 1.5×10^{-2} L
 - E. 1.5 L**
72. Convert 9.60 kg to pounds (1 kg = 2.205 lb).
- A. 21.2 lb**
 - B. 4.35 lb
 - C. 2.12 lb
 - D. 43.5 lb
 - E. 0.435 lb
73. Convert: 0.326 mm = _____ m.
- A. 3.26×10^{-4} m**
 - B. 3.26×10^{-3} m
 - C. 3.26×10^2 m
 - D. 32.6 m
 - E. 3.26×10^{-5} m

74. Convert: $0.00668 \text{ cm} =$ _____ mm.

- A. 6.68 mm
- B.** 6.68×10^{-2} mm
- C. 0.668 mm
- D. 6.68×10^{-4} mm
- E. 6.68×10^{-5} mm

75. Convert: $6.76 \text{ qt} =$ _____ mL.

- A. 7.17 mL
- B. 7.17×10^3 mL
- C.** 6.38×10^3 mL
- D. 6.38 mL
- E. 1.19×10^4 mL

76. Convert: $24.0 \text{ cc} =$ _____ mL.

- A. 240 mL
- B. 2.40×10^3 mL
- C. 2.40 mL
- D.** 24.0 mL
- E. 0.240 mL

77. Convert: $6.28 \text{ mL} =$ _____ qt.

- A. 6.66 mL
- B. 5.92 mL
- C. 5.92×10^3 mL
- D. 1.11×10^4 mL
- E.** 6.66×10^{-3} mL

78. Convert: $828.6 \text{ qt} =$ _____ mL.

- A. 8.286×10^5 mL
- B. 878.3 mL
- C. 8.783×10^{-1} mL
- D. 1.458×10^6 mL
- E.** 7.817×10^5 mL

79. Convert: 2.80 in = _____ mm.
- A.** 71.1 mm
 - B. 7.11 mm
 - C. 1.102 mm
 - D. 0.71 mm
 - E. 711 mm
80. Convert: 88.0 mg = _____ lb.
- A. 1.94×10^2 lb
 - B. 8.80×10^{-5} lb
 - C. 3.99×10^7 lb
 - D. 3.88×10^{-4} lb
 - E.** 1.94×10^{-4} lb
81. Convert 81.0°F to kelvins.
- A.** 300.2 K
 - B. 354.0 K
 - C. -192.0 K
 - D. -245.8 K
 - E. 476.4 K
82. Convert: 29.3°C = _____ °F.
- A.** 84.7°F
 - B. 52.7°F
 - C. 20.7°F
 - D. 48.3°F
 - E. -15.7°F
83. Convert: 366.2 K = _____ °C.
- A. 639.2°C
 - B.** 93.2°C
 - C. 691.2°C
 - D. 235.4°C
 - E. 203.4°C
84. Convert: 15.3°F = _____ °C.
- A. 26.28°C
 - B. -30.06°C
 - C.** -9.28°C
 - D. 85.14°C
 - E. 288.3°C

85. 485.5 K equals
- A. 212.5°F
 - B. 873.9°C
 - C. 758.5°F
 - D.** 212.5°C
 - E. 758.5°C
86. What Kelvin temperature reading equals 61.2°F?
- A. -256.8 K
 - B. 325.6 K
 - C. -220.4 K
 - D. 324.8 K
 - E.** 289.2 K
87. Convert: $-10.5^{\circ}\text{F} =$ _____ $^{\circ}\text{C}$.
- A.** -23.6°C
 - B. 11.9°C
 - C. -76.5°C
 - D. 38.7°C
 - E. 262.5°C
88. Convert: $-12.2^{\circ}\text{C} =$ _____ $^{\circ}\text{F}$.
- A. -54.0°F
 - B.** 10.0°F
 - C. 25.2°F
 - D. -38.8°F
 - E. -22.0°F
89. 232.0°F is equivalent to
- A. 146.7°C
 - B.** 111.1°C
 - C. 360.0°C
 - D. 475.2°C
 - E. 128.9°C
90. Convert: $18.6^{\circ}\text{F} =$ _____ $^{\circ}\text{C}$.
- A. 28.11°C
 - B. -24.12°C
 - C. 91.08°C
 - D.** -7.44°C
 - E. 10.33°C

91. What is the Celsius equivalent of 436.5 K?
- A. 709.5°C
 - B. 817.7°C
 - C. 224.7°C
 - D. 785.7°C
 - E.** 163.5°C
92. Convert: $-47.9^{\circ}\text{C} = \underline{\hspace{2cm}}$ °F.
- A. -118.2°F
 - B. 5.4°F
 - C.** -54.2°F
 - D. -58.6°F
 - E. -86.2°F
93. Convert: $91.2^{\circ}\text{C} = \underline{\hspace{2cm}}$ K.
- A. -181.8 K
 - B. 181.8 K
 - C. 164.2 K
 - D.** 364.2 K
 - E. 32.9 K
94. Cesium melts at 302 K and boils at 944 K. What would be the physical state of cesium at 25°C ?
- solid
95. If 1.000 kg equals 2.205 lb, what is the mass in pounds of a human who weighs 51.35 kg?
- A.** 113.2 lb
 - B. 23.29 lb
 - C. 93.2 lb
 - D. 53.56 lb
 - E. none of these
96. The Celsius equivalent of 62.2 K is
- A. 335.2°C
 - B. 62.2°C
 - C. 162.2°C
 - D.** -210.8°C
 - E. 144.0°C

97. 18.4°C is equal to
- A.** 65.1°F
 - B. 1.1°F
 - C. -254.6K
 - D. -7.6°F
 - E. none of these
98. Convert: 21.9°C = _____ °F.
- A. 7.4°F
 - B. 44.2°F
 - C. -19.8°F
 - D. 39.4°F
 - E.** 71.4°F
99. Convert: -97.7°C = _____ K.
- A. -370.7 K
 - B. 370.7 K
 - C.** 175.3 K
 - D. 175.9 K
 - E. 54.3 K
100. Density is an example of a
- A. chemical property
 - B.** physical property
 - C. qualitative property
 - D. chemical change
 - E. physical change
101. Water has a density of 1.0 g/mL. Which of these objects will float in water?
Object I: mass = 50.0 g; volume = 69.4 mL
Object II: mass = 60.9 g; volume = 54.7 mL
Object III: mass = 100.0 g; volume = 40.0 mL
- A.** I only
 - B. I, III
 - C. II only
 - D. II, III
 - E. III only

102. Calculate the mass of a rectangular solid that has a density of 3.96 g/cm^3 and measures 2.50 cm by 1.80 cm by 3.00 cm.
- A. 3.41 g
 - B. 53.5 g**
 - C. 9.90 g
 - D. 28.9 g
 - E. 56.5 g
103. Find the volume of an object that has a density of 3.14 g/mL and a mass of 94.7 g.
- A. 30.2 mL**
 - B. $3.32 \times 10^{-2} \text{ mL}$
 - C. 297 mL
 - D. $3.02 \times 10^{-2} \text{ mL}$
 - E. $2.97 \times 10^5 \text{ mL}$
104. An experiment requires 66.6 g of ethyl alcohol (density = 0.790 g/mL). What volume, in liters, will be required?
- A. $5.26 \times 10^{-2} \text{ L}$
 - B. $1.19 \times 10^{-5} \text{ L}$
 - C. $8.43 \times 10^4 \text{ L}$
 - D. $8.43 \times 10^{-2} \text{ L}$**
 - E. 52.6 L
105. At 20°C the density of mercury is 13.6 g/cm^3 . What is the mass of 97.8 mL of mercury at 20°C ?
- A. $1.33 \times 10^3 \text{ g}$**
 - B. 7.19 g
 - C. 1.00 g/mL
 - D. 0.139 g
 - E. none of these
106. If a 100-g sample of platinum metal has a volume of 4.671 mL, what is the density of platinum in g/cm^3 ?
- A. 21.4 g/cm^3**
 - B. 2.14 g/cm^3
 - C. 0.0467 g/cm^3
 - D. 467 g/cm^3
 - E. none of these

107. An experiment requires 74.2 mL of ethyl alcohol. If the density of ethyl alcohol is 0.790 g/cm^3 , what is the mass of 74.2 mL of ethyl alcohol?
- A. 93.9 g
 - B. 10.6 g
 - C. 58.6 g**
 - D. $5.86 \times 10^{-2} \text{ g}$
 - E. none of these
108. If a 100.-g sample of a metal has a volume of 8.65 mL, what is the density of the metal?
- A. 11.6 g/mL**
 - B. 1.16 g/mL
 - C. 0.0865 g/mL
 - D. 9 g/mL
 - E. none of these
109. The volume (in milliliters) occupied by 41.9 g of mercury (density = 13.6 g/mL) is
- A. 570 mL
 - B. 3.08 mL**
 - C. 0.325 mL
 - D. 28.3 mL
 - E. none of these
110. The density of copper is 8.92 g/mL. The mass of a piece of copper that has a volume of 10.4 mL is
- A. 0.928 g
 - B. 928 g
 - C. 92.8 g**
 - D. $9.28 \times 10^{-2} \text{ g}$
 - E. none of these
111. The density of gold is 19.3 g/mL. What is the volume of a gold nugget that weighs 68.7 g?
- A. $1.33 \times 10^3 \text{ mL}$
 - B. 3.56 mL**
 - C. 0.281 mL
 - D. 49.4 mL
 - E. none of these

112. Aluminum has a density of 2.70 g/cm^3 . What is the mass of a rectangular block of aluminum measuring 11.1 cm by 22.2 cm by 34.5 cm?
- A. 183 kg
 - B. $3.15 \times 10^3 \text{ kg}$
 - C. 0.318 kg
 - D.** 23.0 kg
 - E. none of these
113. An object has a mass of 40.1 g and occupies a volume of 7.67 mL. The density of this object is
- A. 308 g/mL
 - B. 0.191 g/mL
 - C.** 5.23 g/mL
 - D. too low to measure
 - E. 40.1 g/mL
114. What volume would be occupied by a piece of aluminum (density = 2.70 g/mL) weighing 98.0 g?
- A. 265 mL
 - B. $2.76 \times 10^{-2} \text{ mL}$
 - C.** 36.3 mL
 - D. 3.63 mL
 - E. none of these
115. A graduated cylinder contains 20.0 mL of water. An irregularly shaped object is placed in the cylinder, and the water level rises to the 31.2-mL mark. If the object has a mass of 80.4 g, what is its density?
- A.** 7.18 g/mL
 - B. 0.139 g/mL
 - C. 2.58 g/mL
 - D. 4.02 g/mL
 - E. none of these
116. A piece of an unknown metal weighs 400.1 g and occupies a volume of 72.2 mL. What is the density of this metal?
- A. $2.89 \times 10^4 \text{ g/mL}$
 - B.** 5.54 g/mL
 - C. 0.180 g/mL
 - D. 55.4 g/mL
 - E. none of these

117. A sample of an unknown metal (density = 4.920 g/mL) weighs 891.8 g. What is the volume of this piece of metal?
- A. 4.388×10^3 mL
 - B. 5.517×10^{-3} mL
 - C.** 181.3 mL
 - D. 1.813×10^5 mL
 - E. none of these
118. The density of an object that has a mass of 8.07 g and occupies a volume of 1.20 mL equals
- A. 8.07 g/mL
 - B. 1.20 g/mL
 - C.** 6.73 g/mL
 - D. 0.15 g/mL
 - E. 9.68 g/mL
119. An empty graduated cylinder weighs 55.26 g. When filled with 92.6 mL of an unknown liquid, it weighs 92.39 g. The density of the unknown liquid is
- A. 37.13 g/mL
 - B. 92.6 g/mL
 - C.** 0.401 g/mL
 - D. 2.49 g/mL
 - E. 3.44×10^3 g/mL
120. A solid object with a volume of 5.62 mL weighs 108 g. Would this object float or sink in mercury? Explain. (Density of Hg = 13.6 g/mL.)

The object would sink. Density of the object = 19.2 g/mL. $d(\text{object}) > d(\text{Hg})$.

121. Copper has a density of 8.96 g/cm^3 . If a cylinder of copper weighing 34.94 g is dropped into a graduated cylinder containing 20.00 mL of water, what will be the new water level?
- A. 3.90 mL
 - B. 0.256 mL
 - C. 16.10 mL
 - D.** 23.90 mL
 - E. 32.86 mL

122. A chemist needs 18.3 g of bromine for an experiment. What volume should she use?
(Density of bromine = 3.12 g/cm^3 .)
- A. 0.170 mL
 B. 18.3 mL
 C. 57.1 mL
 D. 15.2 mL
E. 5.87 mL
123. A chunk of sulfur has a volume of 5.95 cm^3 . What is the mass of this sulfur?
(Density of sulfur = 2.07 g/cm^3 .)
- A. 0.348 g
 B. 5.95 g
 C. 2.87 g
 D. 3.88 g
E. 12.3 g
124. One side of a backyard fence measures 314 inches in length. How many feet does this represent?
- A.** 26.2 ft
 B. 3768. ft
 C. 0.0382 ft
 D. 124. ft
 E. 798. ft
125. A golfer putted a golf ball 7.7 ft across a green. How many inches does this represent?
- A. 0.64 in
 B. 3.0 in
C. 92. in
 D. 1.6 in
 E. 0.33 in
126. How many centimeters are in 15.1 inches?
- A. 5.94 cm
 B. 0.168 cm
 C. 17.6 cm
D. 38.4 cm
 E. 181. cm
127. An iron sample has a mass of 2.74 lb. What is the mass of this sample in grams?
- A. 6.04 g
B. $1.24 \times 10^3 \text{ g}$
 C. $1.24 \times 10^{-3} \text{ g}$
 D. $6.04 \times 10^3 \text{ g}$
 E. $2.74 \times 10^3 \text{ g}$

128. A dining room table measures 5.8 feet in length. How many inches does this represent?
- A. 0.48 in
 - B. 2.1 in
 - C. 18. in
 - D. 2.3 in
 - E. 70. in**
129. How many cups are in a 64-oz pitcher of lemonade? (8 fluid oz = 1 cup)
- A. 512 cups
 - B. 0.13 cup
 - C. 72 cups
 - D. 56 cups
 - E. 8 cups**
130. Perform the following conversion: $5.39 \text{ m/s} = \underline{\hspace{2cm}}$ km/h
- A. 19.4 km/h**
 - B. 0.323 km/h
 - C. 1.50 km/h
 - D. 668 km/h
 - E. 186 km/h
131. Perform the following conversion: $6.41 \text{ m/s} = \underline{\hspace{2cm}}$ mi/h
- A. 0.349 mi/h
 - B. 14.3 mi/h**
 - C. 251 mi/h
 - D. 239 mi/h
 - E. 12.8 mi/h
132. Baking soda and vinegar are mixed in a balloon. A gas is produced, and the balloon expands to a volume of 2.59 L. What is the volume of the balloon in cm^3 ?
- A. $2.59 \times 10^3 \text{ cm}^3$**
 - B. 25.9 cm^3
 - C. 0.259 cm^3
 - D. $2.59 \times 10^{-3} \text{ cm}^3$
 - E. $2.59 \times 10^2 \text{ cm}^3$
133. An object is 149.7 inches in height. Express this height in centimeters.
- A. 58.94 cm
 - B. 0.01697 cm
 - C. 12.48 cm
 - D. 380.2 cm**
 - E. 152.2 cm

134. An object is 153.8 inches in height. Express this height in feet.
- A. 0.07802 ft
 - B. 1846 ft
 - C. 60.55 ft
 - D. 390.7 ft
 - E.** 12.82 ft
135. A toy measures 39.1 cm in length. How many inches does this represent?
- A.** 15.4 in
 - B. 99.3 in
 - C. 0.0650 in
 - D. 3.26 in
 - E. 469 in
136. A runner jogs 5.0 miles every morning. How many kilometers does this represent?
- A. 3.1 km
 - B.** 8.0 km
 - C. 60 km
 - D. 0.32 km
 - E. 3.4 km
137. How many quarts are in a 11.6-gal cooler of fruit punch? (1 gal = 4 qt)
- A. 2.90 qt
 - B. 0.345 qt
 - C. 15.6 qt
 - D. 7.6 qt
 - E.** 46.4 qt
138. A car tire has a pressure of 39 psi (pounds per square inch). What is the pressure of the tire in atm (atmospheres)? (1 atm = 14.70 psi)
- A.** 2.7 atm
 - B. 0.38 atm
 - C. 54. atm
 - D. 24. atm
 - E. 573. atm

139. How many liters are in a 29-oz bottle of pop?
(1 qt = 32 fluid oz)
(1 L = 1.0567 qt)
- A. 0.91 L
 - B. 0.96 L
 - C. 1.2 L
 - D. 0.86 L**
 - E. 1.0 L
140. Your friend is 5.0 ft, 9.8 in tall. What is your friend's height in meters?
- A. 0.38 m
 - B. 1.8 m**
 - C. 38. m
 - D. 27. m
 - E. 70. m
141. A cat is 7.1 lb. What is the mass of the cat in kilograms? (1 kg = 2.2046 lb)
- A. 16. kg
 - B. 0.31 kg
 - C. 3.2 kg**
 - D. 9.3 kg
 - E. 7.1 kg
142. A walker travels a distance of 1.2 miles. How many inches did the walker travel?
(1 mi = 5280. ft)
(1 ft = 12 in)
- A. 6.3×10^3 in
 - B. 5.3×10^2 in
 - C. 14. in
 - D. 10.0 in
 - E. 7.6×10^4 in**
143. A person has a mass of 9.82×10^4 g. What is this person's mass in pounds?
(1 kg = 2.2046 lb)
- A. 2.16×10^5 lb
 - B. 4.45×10^4 lb
 - C. 216. lb**
 - D. 98.2 lb
 - E. 982. lb

144. The volume of a helium balloon is 2.1 L. What is this volume in cm^3 ? ($1 \text{ L} = 1 \text{ dm}^3$)

- A. $21. \text{ cm}^3$
- B.** $2.1 \times 10^3 \text{ cm}^3$
- C. $2.1 \times 10^2 \text{ cm}^3$
- D. 0.21 cm^3
- E. $2.1 \times 10^4 \text{ cm}^3$