Chemistry in Focus A Molecular View of Our World 6th edition Tro Test Bank

SKU: 9781305084476-TEST-BANK

Chapter 02 - The Chemist's Toolbox

1. When adding and subtracting, the number of significant figures in the answer is determined by _____.
   a. the most precise number
   b. the least precise number
   c. the number with the most significant figures in the calculation
   d. the number with the fewest significant figures in the calculation

ANSWER: b
POINTS: 1

2. When multiplying and dividing, the number of significant figures in the answer is determined by _____.
   a. the most precise number
   b. the least precise number
   c. the number with the most significant figures in the calculation
   d. the number with the fewest significant figures in the calculation

ANSWER: d
POINTS: 1

3. How many significant figures are there in the number 10.00?
   a. 1
   b. 2
   c. 3
   d. 4

ANSWER: d
POINTS: 1

4. How many significant figures are there in the number 10,100?
   a. 1
   b. 3
   c. 4
   d. 5

ANSWER: b
POINTS: 1

5. Calculate the density with the correct number of significant figures of a 50.0 g sample of mercury with a volume of 3.66 mL.
   a. 13.66 g/mL
   b. 13.7 mL
   c. 183 g/mL
   d. 0.0732 g/mL
   e. 0.073 g/mL

ANSWER: b
POINTS: 1

6. Calculate the density to the correct number of significant figures of a 100.0 g sample of mercury which occupies a volume of 7.36 cm^3.
   a. 13.58 g/cm^3

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b. 13.66 g/cm^3
c. 183 g/cm^3
d. 0.0732 g/cm^3
e. 0.073 g/cm^3

ANSWER: a
POINTS: 1

7. Determine the mass in grams of a gold sample which occupies a volume of 16.39 mL? Gold has a density of 19.3 g/mL.
a. 0.118 g
b. 0.316 g
c. 0.849 g
d. 1.18 g
e. 316 g

ANSWER: e
POINTS: 1

8. Determine the volume occupied by 1.5 g of ethyl alcohol. The density of ethyl alcohol is 0.789 g/mL.
a. 1.9 mL
b. 1.3 mL
c. 0.53 mL
d. 0.526 mL
e. 1.331 mL

ANSWER: a
POINTS: 1

9. Chloroform is a commonly used anesthetic with a density of 1.483 g/mL. Determine the volume of chloroform needed to deliver a 9.37 g sample of the anesthetic.
a. 0.158 g
b. 6.32 g
c. 13.9 g
d. 13.89 g
e. 0.0632 g

ANSWER: b
POINTS: 1

10. If 15.0 mL of a metal has a mass of 103.0 g, what is the density of the metal?
a. 6.87 g/mL
b. 1550 g/ mL
c. 0.146 g/mL
d. 1.46 g/mL
e. None of these.

ANSWER: a
POINTS: 1

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11. The density of gold is 19.3 g/mL. If the current price of gold is $56.75 per gram, what is the volume of a nugget of gold worth $150.00?

a. 1.15 mL
b. 0.868 mL
c. 1.72 mL
d. 1.27 mL
e. 0.137 mL

ANSWER: e
POINTS: 1

12. Which is the standard SI unit for mass?

a. Gram
b. Pound
c. Ounce
d. Kilogram
e. Ton

ANSWER: d
POINTS: 1

13. Which is the standard SI unit for length?

a. Meter
b. Feet
c. Mile
d. Kilometer
e. Centimeter

ANSWER: a
POINTS: 1

14. Which is the correct SI unit for time?

a. Meter
b. Hour
c. Second
d. Minute
e. Gram

ANSWER: c
POINTS: 1

15. Which of these represents the SI prefix for micro (μ)?

a. 10^{-6}
b. 10^{-3}
c. 10^{-9}
d. 10^{-2}
e. 10^{6}

ANSWER: a

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POINTS: 1

16. Which of these represents the SI prefix for centi (c)?
    a. 10^{-6}
    b. 10^{-3}
    c. 10^{-1}
    d. 10^{-2}
    e. 10^{6}

ANSWER: d
POINTS: 1

17. Which of these represents the SI prefix for mega (M)?
    a. 10^{9}
    b. 10^{6}
    c. 10^{3}
    d. 10^{-2}
    e. 10^{-6}

ANSWER: b
POINTS: 1

18. The diameter of the nucleus of an atom is approximately 1×10^{-13} meters. If 1 nm is equal to 10 Angstroms, what is the diameter of the nucleus in Angstroms? (1 nm = 1 x 10^{-9} meter)
    a. 1×10^{-21} A
    b. 1×10^{-6} A
    c. 1×10^{-5} A
    d. 1×10^{-4} A
    e. 1×10^{-3} A

ANSWER: e
POINTS: 1

19. Convert 89.5 meters to millimeters.
    a. 8.95×10^{4} mm
    b. 8.95×10^{-4} mm
    c. 8.95×10^{2} mm
    d. 8.95×10^{-2} mm
    e. None of these.

ANSWER: a
POINTS: 1

20. Which of the following is not true?

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a. 1 cm = .01 m
b. 100 cm = 1 m
c. 1 cm = 100m
d. .01 cm = .0001m
e. 10000 cm = 100 m

ANSWER: c
POINTS: 1

21. Given that 1 in = 2.54 cm, which of the following is true?

a. 1 in^2 = 2.54 cm^2
b. 1 in^2 = 5.08 cm^2
c. 1 in^2 = 6.45 cm^2
d. 1 in^2 = 1.27 cm^2
e. None of these.

ANSWER: c
POINTS: 1

22. One m^3 equals _____.

a. 1000 mm^3
b. 1,000,000 mm^3
c. 1,000,000,000 mm^3
d. 1,000,000,000,000 mm^3

ANSWER: c
POINTS: 1

23. One milliliter is equal to _____.

a. 2.54 cubic inches
b. 1000 liters
c. 1 cubic centimeter
d. 16.39 cubic inches

ANSWER: c
POINTS: 1

24. 1.00 in^3 equals _____.

a. 2.54 cm^3
b. 7.62 cm^3
c. 16.38 cm^3
d. .394 cm^3

ANSWER: c
POINTS: 1

25. The long jump record is 8.90 m. What is the length in inches? (1 m = 39.37 inches)

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a. 9.73 inches
b. 293 inches
c. 350 inches
d. 4204 inches
e. 5000 inches

ANSWER: c
POINTS: 1

26. The long jump record is 8.90 m. What is the length in yards? (1 yd = 0.9144 m)
a. 9.73 yards
b. 293 yards
c. 350 yards
d. 4204 yards
e. 5000 yards

ANSWER: a
POINTS: 1

27. A football field is 100.0 yards long. What is its length in meters? (1 yd = 0.9144 m)
a. 0.09144 m
b. 91.44 m
c. 274.32 m
d. 334 m
e. 9.144×10^3 m

ANSWER: b
POINTS: 1

28. A football field is 100 yards long. What is its length in centimeters? (1 yd = 0.9144 m)
a. 0.09144 cm
b. 91.44 cm
c. 274.32 cm
d. 334 cm
e. 9.144×10^3 cm

ANSWER: e
POINTS: 1

29. How many kilograms of calcium are there in a 173 pounds of calcium? (1 pound = 454 grams)
a. 1.1 kg
b. 78.54 kg
c. 1.1×10^2 kg
d. 3.8×10^4 kg
e. 7.85×10^4 kg

ANSWER: b
POINTS: 1

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30. Most races are now measured in kilometers. What is the distance in miles a runner must complete in a 10 kilometer run. (1 km = 0.62137 mile)

a. 3.1 miles
b. 6.2 miles
c. 16.1 miles
d. 32.2 miles
e. 62.137

ANSWER: b
POINTS: 1

31. Convert 2.50×10^{4}. meters to miles (1 mile = 5280 feet).

a. 76.2 miles
b. 6.35 miles
c. 15.5 miles
d. 155 miles
e. 186 miles

ANSWER: c
POINTS: 1

32. Convert 10.5 mm/s to ft/hr.

a. 124 ft/hr
b. 9.57×10^{-6} ft/hr
c. .0344 ft/hr
d. 37800 ft/hr
e. None of these.

ANSWER: a
POINTS: 1

33. Which of these numbers has the most significant figures?

a. 0.5071
b. 0.201
c. 6.02×10^{23}
d. 51
e. 103

ANSWER: a
POINTS: 1

34. Solve the problem.

3.728 + 6.272

a. 10
b. 10.0
c. 10.00
d. 10.000

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e. 10.0000

ANSWER: d
POINTS: 1

35. Solve the problem.

$3.72 \times 10^{8} \times 9.26 \times 10^{-3}$

a. 3.44×10^{6}
b. 4.02×10^{10}
c. 3.45×10^{5}
d. 3.44×10^{-4}
e. 4.02×10^{-10}

ANSWER: a
POINTS: 1

36. Solve the problem.

$1.5 \times 10^{3} + 3.14 \times 10^{4} - 1.21 \times 10^{2} = ?$

a. 3.28×10^{4}
b. 3.30×10^{3}
c. 3.3×10^{-4}
d. 3.30×10^{5}
e. 3.43×10^{9}

ANSWER: a
POINTS: 1

37. Solve the problem.

$(5.46 \times 10^{7} + 3.13 \times 10^{6}) \times (7.65 \times 10^{5})$

a. 65.7×10^{18}
b. 130.7×10^{18}
c. 4.42×10^{13}
d. 2.39×10^{12}
e. 65.7×10^{8}

ANSWER: c
POINTS: 1

38. Solve the problem.

$(3.21 \times 10^{10} - 3.13 \times 10^{12}) \div (7.65 \times 10^{5})$

a. 4.13×10^{6}

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b. 2.37×10^{18}

c. 65.7×10^{18}

d. -23.7×10^{17}

e. -4.04×10^{6}

ANSWER: e
POINTS: 1

39. Solve the problem.

$(12.67 \times 4.23) \div 23.42$

a. 2.3587
b. 2.6334
c. 2.2289
d. 2.8800
e. 2.2884

ANSWER: e
POINTS: 1

40. 0.01% is equivalent to which of the following?

a. 100 ppm
b. 100 ppb
c. 0.000001 ppm
d. 0.000001 ppb
e. None of these.

ANSWER: a
POINTS: 1

41. Which of these is the correct scientific notation for 6,000,220?

a. 6.022×10^{5}

b. 6.00022×10^{5}

c. 6.00022×10^{6}

d. 6.00022×10^{-5}

e. 6.00022×10^{-6}

ANSWER: c
POINTS: 1

42. Which of the following is correctly written in scientific notation?

a. 50.0×10^{6}

b. 4.02×10^{216}

c. $1 \times 10^{-6.8}$

d. $1.005 \times 10^{-9.05}$

e. 10^{-5}

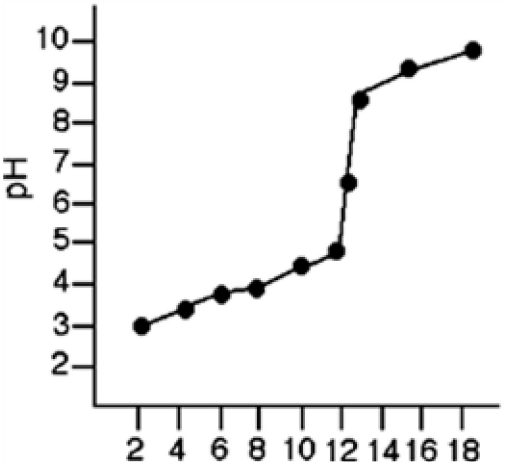
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ANSWER: b
POINTS: 1

43. Which of these is **incorrectly** matched?
    a. centi c 10^{-2}
    b. mega M 10^{6}
    c. milli m 10^{-3}
    d. nano n 10^{9}
    e. micro μ 10^{-6}

ANSWER: d
POINTS: 1

Figure 2-1



44. Refer to Figure 2-1. What is the pH of the solution after 8 mL of base have been added.
    a. 3
    b. 4
    c. 6
    d. 7
    e. 8

ANSWER: b
POINTS: 1

45. Refer to Figure 2-1. What affect was there on the pH of the solution when the volume of base added was increased from 8 mL to 13 mL?
    a. The pH dropped by a value of 4.
    b. The pH increased by a value of 4.
    c. The pH remained relatively unchanged.
    d. The pH increased by a value of 10.
    e. The pH increased by a value of 20.

ANSWER: b
POINTS: 1

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46. Refer to Figure 2-1. Which of these statements is **true** based on the data provided by the graph?
    a. The pH of the solution must be determined algebraically.
    b. The pH of the solution is relatively unaffected by the addition of base.
    c. The pH of the solution is 7 when approximately 12 mL of base have been added.
    d. The pH of the solution is relatively constant with addition of the first 14 mL of base.
    e. The pH of the solution rises significantly when the volume is increased from 14 mL to 18 mL.

ANSWER: e
POINTS: 1

47. Which of these numbers has the four significant figures?
    a. 0.3211
    b. 0.201
    c. 6.02×10^{23}
    d. 5100
    e. 0.0103

ANSWER: a
POINTS: 1

48. Solve the problem.

131.7×1.05
    a. 1.38×10^{3}
    b. 1.38×10^{2}
    c. 1.3×10^{3}
    d. 1.3×10^{3}
    e. 1.3×10^{-3}

ANSWER: b
POINTS: 1

49. Solve the problem.

$33.5 \div 3.011$
    a. 1.11×10^{1}
    b. 1.11×10^{3}
    c. 1.113×10^{1}
    d. 1.11×10^{2}
    e. 1.112587×10^{1}

ANSWER: a
POINTS: 1

50. Which of these is the correct normal decimal notation for 5.23×10^{-4}?
    a. 0.0523

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b. 0.00523
c. 0.0000523
d. 0.000523
e. 52,300

ANSWER: d
POINTS: 1

51. Which of these is the correct normal notation for 7.77×10^7?

a. 0.000000777
b. 0.0777
c. 7,770
d. 7,770,000
e. 77,700,000

ANSWER: e
POINTS: 1

52. Which of these is the correct normal notation for 8.14×10^5?

a. 0.0000814
b. 0.000814
c. 81.400
d. 814,000
e. 81,400,000

ANSWER: d
POINTS: 1

53. Which of these series correctly orders the values given from smallest to largest?

I. 100 cm
II. 1 km
III. 10 m
IV. 100,000 mm

a. I < II < III < IV
b. II < I < IV < III
c. I < II = III < IV
d. I < IV < III < II
e. I < III < IV < II

ANSWER: e
POINTS: 1

54. Which of these series correctly orders the values given from smallest to largest?

I. 0.001 Mg
II. 2,000,000 ng
III. 1 Gg
IV. 100,000 cg

a. III < II < II < IV

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b. II < I < IV < III
c. II < I = IV < III
d. I < IV = III < II
e. I < III < IV < II

ANSWER: c
POINTS: 1

55. Because of the high heat and humidity in the summer in Death Valley, California, a hiker requires about 1 quart of water for every two miles traveled on foot. If the density of water is 0.999 g/mL at 45^{o}C, how many kilograms of water are required for a person to walk 30 kilometers in Death Valley? (1 L = 1.0567 qt; 1 km = 0.62317 mi)

a. 8.8 kg
b. 70 kg
c. 350 kg
d. 700 kg
e. 8.8×10^{3} kg

ANSWER: a
POINTS: 1

56. A sample of molten iron occupies of a volume of 7.11×10^{-3} L. If the density of iron is 7.86 g/cm^{3}, what is the mass of iron in grams in the sample?

a. 0.000904 g
b. 0.0559 g
c. 0.904 g
d. 1.105 g
e. 55.8846 g

ANSWER: e
POINTS: 1

57. An irregular shaped piece of metal with a mass of 220 g was placed in a graduated cylinder that contained 35.00 mL of water. This raised the water level to 52.50 mL. What is the density of the metal?

a. 0.285 g/mL
b. 4.19 g/mL
c. 17.5 g/mL
d. 12.6 g/mL
e. 38.5 g/mL

ANSWER: d
POINTS: 1

58. An irregular shaped piece of metal with a mass of 105 g was placed in a graduated cylinder that contained 25.00 mL of water. This raised the water level to 45.35 mL. What is the density of the metal?

a. 0.238 g/mL
b. 2.3 g/mL
c. 4.2 g/mL
d. 5.16 g/mL
e. 20.35 g/mL

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ANSWER: d
POINTS: 1

59. Convert 4.5 inches to **meters**. (2.54 cm = 1 inch)
a. 0.1143 m
b. 1.77 m
c. 11.43 m
d. 0.0177 m
e. 1143 m
ANSWER: a
POINTS: 1

60. Determine the volume in liters of a 1.00 ounce bottle.(1.06 qt = 1 L; 32 ounces = 1 qt)
a. 0.0295 L
b. 0.03125 L
c. 0.03313 L
d. 30.2 L
e. 33.9 L
ANSWER: a
POINTS: 1

61. A regulation soccer field is 110.0 yards in length. Calculate the length in millimeters. (1.094 yards = 1 m)
a. 0.101 mm
b. 1.01 mm
c. 100.5 mm
d. 1.01×10^4 mm
e. 1.01×10^5 mm
ANSWER: e
POINTS: 1

62. A 5 foot 7 inch track athlete weighs 110 pounds. What is her height in cm and her weight in kilograms? (2.54 cm = 1 inch; 454 g = 1 pound)
a. 14.5 cm 242 kg
b. 152 cm 49.9 kg
c. 170 cm 49.9 kg
d. 154 cm 242 kg
e. 152 cm 4.99×10^4 kg
ANSWER: c
POINTS: 1

63. Chemical waste is often shipped in 55-gallon drums. What is the weight in pounds of a 55-gallon drum if the density of the waste is 1.5942 g/cm^3? (454 g = 1 pound; 0.9463 L = 1 quart; 4 quarts = 1 gallon)
a. 130 lbs
b. 731 lbs

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c. 810 lbs
d. 4.5×10^4 lbs
e. 5.9×10^4 lbs

ANSWER: b
POINTS: 1

64. Solve the problem.

$5.6 \times 10^2 \times 7.41 \times 10^3 = ?$

a. 232×10^1
b. 7.55×10^5
c. 2.32×10^5
d. 4.1×10^6
e. 232×10^5

ANSWER: d
POINTS: 1

65. What is the mass in kilograms of a 25.00 pound dumbbell? (454 g = 1 pound)

a. 1.377×10^{-3} kg
b. 1.377 kg
c. 11.35 kg
d. 1.377×10^3 kg
e. 1.135×10^7 kg

ANSWER: c
POINTS: 1

66. An international group of zookeepers with successful breeding programs made the following animal exchanges last year. Using the same bartering system, how many monkeys can a zoo obtain in exchange for 15 flamingos?

3 oryxes = 1 tiger
1 camel = 6 anteaters
1 rhino = 4 monkeys
3 monkeys = 1 tiger
2 flamingos = 1 anteater
5 lemurs = 1 rhino
3 lemurs = 1 camel
1 rhino = 4 oryxes

a. 3 monkeys
b. 5 monkeys
c. 8 monkeys
d. 12 monkeys
e. 15 monkeys

ANSWER: a
POINTS: 1

67. Which of these samples of aluminum will occupy the **greatest** volume? (Density of aluminum = 2.70 g/cm^3; 454 g = 1 pound)

a. 10,000 g

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b. 25 pounds
c. 1 kg
d. 5×10^{-2} L
e. 2,000 mL

ANSWER: b
POINTS: 1

68. Which of these samples of water will have the **greatest** mass? (Density of water = 1.00 g/cm^3; 454 g = 1 pound)

a. 10,000 g
b. 25 pounds
c. 1 kg
d. 5×10^{-2} L
e. 2,000 mL

ANSWER: b
POINTS: 1

69. Solve the following equation for y.

$3y + 24 = 6y - 3$

a. 3
b. 6
c. 9
d. 8
e. 12

ANSWER: c
POINTS: 1

70. Solve the following equation for y.

$3y = 24$

a. 3
b. 6
c. 7
d. 8
e. 12

ANSWER: d
POINTS: 1

71. Solve the following equation for z.

$2(z + 6) - 10 = 42$

a. 6
b. 10
c. 12
d. 20

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e. 40

ANSWER: d
POINTS: 1

72. Solve the following equation for z.

$4z \div 2z + 3 = 30$

a. 2
b. 6.25
c. 10
d. 11
e. 13.5

ANSWER: e
POINTS: 1

73. Solve the following equation for x: $13x = x + 156$

a. 13
b. 20
c. 1
d. 7
e. 12

ANSWER: a
POINTS: 1

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