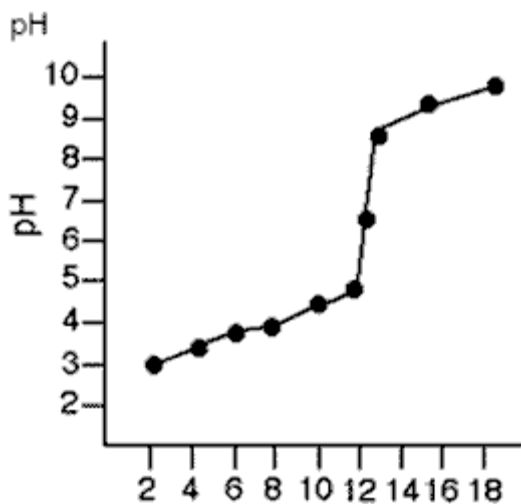


CHM-100 CHEMISTRY MAN & ENVIRONMENT

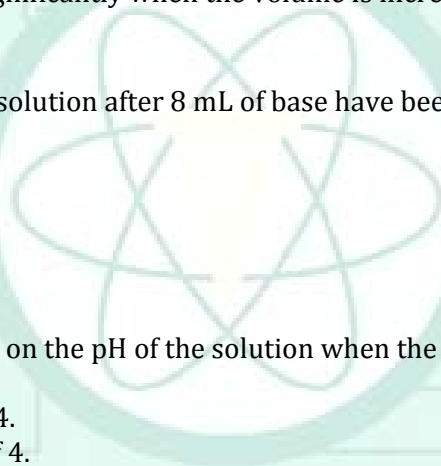
The Chemist's Tool Box Sample Test

Multiple Choice: Identify the choice that best completes the statement or answers the question.

- Determine the volume occupied by a 1.5 g sample of ethyl alcohol. The density of ethyl alcohol is 0.7893 g/mL.
 - 1.9 mL
 - 1.3 mL
 - 0.53 mL
 - 0.526 mL
 - 1.331 mL
- 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?
 - 0.285 g/mL
 - 4.19 g/mL
 - 17.5 g/mL
 - 12.6 g/mL
 - 38.5 g/mL
- Which is the correct SI unit for mass?
 - gram
 - pound
 - ounce
 - kilogram
 - ton
- Given that 1 in = 2.54 cm, which of the following is true?
 - $1 \text{ in}^2 = 2.54 \text{ cm}^2$
 - $1 \text{ in}^2 = 5.08 \text{ cm}^2$
 - $1 \text{ in}^2 = 6.45 \text{ cm}^2$
 - $1 \text{ in}^2 = 1.27 \text{ cm}^2$
 - none of these
- Which of these is the correct normal decimal notation for 4.65×10^0 ?
 - 0.465
 - 4.65
 - 46.5
 - 465
 - 4650



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6. Refer to pH. Which of these statements is **true** based on the data provided by the graph?
 - a. The pH of the solution is 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.

7. Refer to pH. 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

8. Refer to pH. 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.

9. 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

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

11. Which of these numbers has the most significant figures?
- 0.5071
 - 0.201
 - 6.02×10^{23}
 - 51
 - 103
12. Which is the correct SI unit for time?
- meter
 - hour
 - second
 - minute
 - gram
13. Determine the volume in liters of a 1.00 ounce bottle. (1.06 qt = 1 L; 32 ounces = 1 qt)
- 0.0295 L
 - 0.03125 L
 - 0.03313 L
 - 30.2 L
 - 33.9 L
14. 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.
- 0.158 g
 - 6.32 g
 - 13.9 g
 - 13.89 g
 - 0.0632 g
15. How many kilograms of calcium are there in 173 pounds of calcium? (1 pound = 454 grams)
- 1.1 kg
 - 78.54 kg
 - 1.1×10^2 kg
 - 3.8×10^4 kg
 - 7.85×10^4 kg
16. The long jump record is 8.90 m. What is the length in inches? (1 m = 39.37 inches)
- 9.73 inches
 - 293 inches
 - 350 inches
 - 4204 inches
 - 5000 inches
17. 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.
- 0.118 g
 - 0.316 g
 - 0.849 g
 - 1.18 g
 - 316 g

18. Convert 4.5 inches to **meters**. (2.54 cm = 1 inch)
- 0.1143 m
 - 1.77 m
 - 11.43 m
 - 0.0177 m
 - 1143 m
19. Which of these represents the SI prefix for nano (n) and kilo (k), respectively?
- 10^9 and 10^6
 - 10^9 and 10^3
 - 10^{-6} and 10^6
 - 10^{-9} and 10^3
 - 10^{-9} and 10^6
20. 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?
- 0.238 g/mL
 - 2.3 g/mL
 - 4.2 g/mL
 - 5.16 g/mL
 - 20.35 g/mL
21. Convert 89.5 meters to millimeters.
- 8.95×10^4 mm
 - 8.95×10^{-4} mm
 - 8.95×10^2 mm
 - 8.95×10^{-2} mm
 - none of these
22. Which of these represents the SI prefix for mega (M)?
- 10^9
 - 10^6
 - 10^3
 - 10^{-2}
 - 10^{-6}
23. Which of these is the correct normal notation for 7.77×10^7 ?
- 0.000000777
 - 0.0777
 - 7,770
 - 7,770,000
 - 77,700,000
24. Which of these represents the SI prefix for micro (μ)?
- 10^{-6}
 - 10^{-3}
 - 10^{-9}
 - 10^{-2}
 - 10^6

25. 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)

- 3.1 miles
- 6.2 miles
- 16.1 miles
- 32.2 miles
- 62.137

26. Which is the correct SI unit for length?

- meter
- feet
- mile
- kilometer
- centimeter

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

- 0.0523
- 0.00523
- 0.0000523
- 0.000523
- 52,300

28. 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.

- 13.66 g/mL
- 13.7 mL
- 183 g/mL
- 0.0732 g/mL
- 0.073 g/mL

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

- 0.0000814
- 0.000814
- 81.400
- 814,000
- 81,400,000

Other

30. The SI unit for temperature is the

- Calorie
- Celsius
- Fahrenheit
- Kelvin
- All of the above