

CHEMICAL QUANTITIES

Chapter Test B

A. Matching

Match each term in Column B with the correct description in Column A. Write the letter of the correct term on the line.

Column A

Column B

- | | |
|--|--------------------------------------|
| _____ 1. the percent by mass of each element in a compound | a. molar mass |
| _____ 2. 0°C and 101.3 kPa or 1 atmosphere | b. empirical formula |
| _____ 3. the lowest whole-number ratio of the atoms of elements in a compound | c. atomic mass |
| _____ 4. the species present in a substance—usually atoms, molecules, or formula units | d. molar volume |
| _____ 5. 6.02×10^{23} representative particles of a substance | e. representative particle |
| _____ 6. the mass of an atom of an element | f. percent composition |
| _____ 7. the mass of one mole of any element or compound | g. one mole |
| _____ 8. 22.4 L of any gas measured at STP | h. standard temperature and pressure |
| | |
| _____ 12. What is the molar mass of C_3H_8 ? | |
| a. 36.0 g | c. 44.0 g |
| b. 11.0 g | d. 6.02×10^{23} g |
| | |
| _____ 13. How many atoms are contained in 12.5 grams of silver? | |
| a. 6.97×10^{22} atoms | c. 0.116 atoms |
| b. 7.52×10^{24} atoms | d. 1.92×10^{-25} atoms |
| | |
| _____ 14. What is the percent of aluminum in $Al_2(SO_4)_3$? | |
| a. 28.1% | c. 15.8% |
| b. 54.0% | d. 56.7% |
| | |
| _____ 15. What is the mass of hydrogen in 50.0 g of propane, C_3H_8 ? | |
| a. 18.2 g | c. 44.0 g |
| b. 9.1 g | d. 81.8 g |
| | |
| _____ 16. Find the number of moles in 3.30 g of $(NH_4)_2SO_4$? | |
| a. 132.1 mol | c. 0.0279 mol |
| b. 40.0 mol | d. 0.0250 mol |

C. Problems

Solve the following problems in the space provided. Show your work.

27. How many atoms are contained in 0.25 moles of Fe?

28. Find the mass, in grams, of 6.25 mol H_2SO_4 .

29. What is the volume, in liters, of 15.0 kg of CO_2 at STP?

30. Determine the molar mass of a compound that has a density of 0.650 g/L at STP.

31. What is the mass, in grams, of 3.75×10^{15} atoms of gold?

32. Calculate the percent composition of $\text{Mg}(\text{NO}_3)_2$.

33. What is the empirical formula of a compound that is 27.3% C and 72.7% O?

34. A compound consisting of 56.38% phosphorus and 43.62% oxygen has a molar mass of 219.9 g/mol. Determine its molecular formula.