

10-2 Review and Reinforcement

Mole Conversions

Answer each of the following questions in the space provided.

1. How would you calculate the number of moles present in a given mass of a substance?

2. How would you calculate the number of particles present in a given number of moles of a substance?

3. How would you calculate the number of particles present in a given mass of a substance?

Complete each of the following conversions as directed. Show all your work.

4. $3.5 \text{ mol C} = \text{_____ g C}$

5. $1.6 \times 10^{24} \text{ molecules FeCl}_3 = \text{_____ mol FeCl}_3$

6. $27.6 \text{ g Ar} = \text{_____ mol Ar}$

7. $4.10 \text{ mol BaSO}_4 = \text{_____ formula units BaSO}_4$

8. $16.5 \times 10^{23} \text{ atoms Zn} = \text{_____ mol Zn}$

10-2 Review and Reinforcement (continued)

9. $0.0621 \text{ mol K}_2\text{S} = \text{_____ g K}_2\text{S}$
10. $65.8 \text{ g Mg} = \text{_____ atoms Mg}$

Solve each of the following problems as directed. Show all your work.

11. Calculate the number of atoms in 0.40 mol of sulfur.
12. Calculate the number of atoms in 2.30 mol of silver.
13. You have a tank of NO_2 gas. If the tank contains 5 mol of the gas, how many atoms are in it?
14. A recipe for chili calls for 3 g of sodium chloride. How many formula units of NaCl is that?
15. If you used 30.6 g of methanol (CH_3OH) to start a fire, how many molecules did you use?
16. A storage tank with a volume of 500. L contains how many moles of He at STP?
17. A chemical reaction between acetic acid and calcium carbonate produces 0.76 mol of CO_2 at STP. How many liters of gas were produced?
18. In an experiment, 12.1 g of dry ice (solid CO_2) were converted into gaseous CO_2 at STP. How many moles were in the sample? What was the volume of gaseous CO_2 ?