

Name: _____ Date: _____ Period: _____

Chemical Quantities Chapter 10 Study Guide

1 mol = 22.4 L 1 mol = 6.02×10^{23} particles 1 mol = molar mass g	$\% \text{ composition} = \frac{\text{total mass of element}}{\text{mass of compound}} \times 100$ $\frac{\text{molecular formula mass}}{\text{empirical formula mass}} = \text{multiplier}$
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Directions: Complete Problems and show all work with units and chemical formulas to receive credit for correct answers!

1. How many formula units are in 3.5 moles of KMnO_4 ?
2. How many grams are in 3.75 moles of MgCl_2 ?
3. How many moles are in 720. grams of HCl ?
4. How many **liters** are in 2.8×10^{24} molecules of O_2 ?
5. How many formula units are in 23.6 grams of strontium oxide?
6. How many formula units are in 4.65 moles of lead IV oxide?
7. How many grams are in 2.50 moles of BaCl_2 ?
8. How many grams are in 2.34×10^{22} molecules of sulfuric acid?
9. How many molecules are in 3.5 moles of KMnO_4 ?

10. How many molecules are in 5.75 moles of MgCl_2 ?

11. How many grams are in 6.52×10^{25} molecules of hydrochloric acid?

12. How many moles are in 2.8×10^{24} molecules of H_2O_2 ?

13. Calculate the % composition of each element in the compound aluminum carbonate.

14. Determine the % composition for each element in $\text{Ba}(\text{MnO}_4)_2$

15. Determine the percent composition of each element in a compound that contains 65.55 g Na, 2.06 g H, 32.05 g C and 48.21 g O. [hint find total mass to use as compound mass]

16. Determine the % of each element in LiClO_3

17. Determine the % of each element in a compound that has 14.21 g C, 1.45 g H and 8.21 g O.

18. **HONORS ONLY:** You have a 236.48 g sample of calcium phosphate what is the mass of
[HINT: Write chemical formula for Barium Phosphate, find % composition of element, then use % comp to find mass of element.]

a. Phosphorous in the sample.

b. Calcium in the sample.

19. Calculate the % composition of each element in the compound $\text{Ba}(\text{NO}_3)_2$.

20. Find the empirical formula of a compound containing 2.160 g of Aluminum, 3.850 g of sulfur and 7.680 g of oxygen?
21. Chemical analysis indicates a sample is composed of 40.68% Carbon, 5.08% hydrogen, and 54.24% oxygen. Determine the empirical formula.
22. Find the molecular formula of a compound if its empirical formula is PdH_2 and the molar mass of the compound is 216.8 g/mol.
23. Find the molecular formula if the empirical formula is $\text{C}_2\text{H}_3\text{O}_2$ and the molar mass is 118.1 g/mol.