

REVIEW QUESTIONS

Chapter 5

1. Two samples of a compound containing carbon and chlorine are decomposed and the following data was obtained:

Sample 1	38.9 g C	448 g of Cl
Sample 2	14.8 g C	134 g of Cl

Based on the data obtained, are these samples the same compound? Show why or why not.

$$\% \text{ C in sample 1} = \frac{38.9 \text{ g C}}{53.7 \text{ g total}} \times 100 = 72.4\%$$

$$\% \text{ C in sample 2} = \frac{448 \text{ g C}}{582 \text{ g total}} \times 100 = 77.0\%$$

Since percent of carbon in the two samples are not the same, these samples are not the same compound.

2. A 7.83 g sample of HCN contains 2.90 g of H and 4.06 g of N. Find the mass of carbon in a sample of HCN with a mass of 3.37 g.

$$\text{mass of carbon in sample} = 7.83 \text{ g} - (2.90 \text{ g} + 4.06 \text{ g}) = 0.87 \text{ g}$$

$$\% \text{ C in sample 1} = \frac{0.87 \text{ g C}}{7.83 \text{ g total}} \times 100 = 11.1\%$$

$$\text{mass of C in sample 2} = 3.37 \text{ g total} \times \frac{11.1 \text{ g C}}{100 \text{ g total}} = 0.374 \text{ g C}$$

3. For the compounds listed below, determine the number of elements and the total number of atoms in each:

a) $\text{C}_{17}\text{H}_{22}\text{ClNO}_4$ # of elements: 5 # of atoms: 45

b) $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ # of elements: 4 # of atoms: 19

c) $\text{CuSO}_4 \cdot 5 \text{H}_2\text{O}$ # of elements: 5 # of atoms: 21

4. Complete the table below with the missing information:

Formula	No. of ions	No. of Oxygen atoms	No. of Hydrogen atoms
$\text{Al}_2(\text{HSO}_4)_3$	5	12	3
$\text{Ca}(\text{C}_2\text{H}_3\text{O}_2)_2$	3	4	6
$(\text{NH}_4)_3\text{PO}_4$	4	4	12

5. Name each compound shown below:

a) KClO_3 potassium chlorate

b) $\text{Fe}(\text{OH})_3$ iron (III) hydroxide (Stock) ferric hydroxide (Classical)

c) Ag_2S silver sulfide

d) BrF_5 bromine pentafluoride

e) $\text{Pb}(\text{CO}_3)_2$ lead (IV) carbonate (Stock) plumbic carbonate (Classical)

f) NI_3 nitrogen triiodide

6. Write formula for each compound below:

a) cupric chlorite _____

b) tetraphosphorus triselenide _____

c) iron(II) phosphate _____

d) magnesium nitride _____

e) ammonium carbonate _____

7. Is each name correct for the given formula? If not, provide the correct name.

a) HNO_3 (aq) hydrogen nitrate

b) CaI_2 calcium diiodide

c) $\text{Pb}(\text{CO}_3)_2$ lead(II) carbonate

d) PCl_5 phosphorus chloride

8. Complete the table below with the missing information:

Formula	Type of Compound (Ionic, Molecular, Acid)	Name
N_2H_4		
		potassium nitrate
H_2CO_3		
		carbon tetrabromide