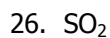
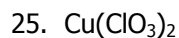


WRITING FORMULAS WORKSHEET

1. sodium nitrate
2. aluminum sulfide
3. iron (III) sulfate
4. strontium hydroxide
5. copper (I) phosphate
6. cesium carbonate
7. nickel (II) oxide
8. silicon dioxide
9. potassium bromide
10. zinc chlorate
11. barium acetate
12. iron (II) phosphide
13. magnesium chromate
14. calcium nitride
15. silver sulfite
16. sodium hydrogen carbonate
17. copper (II) chloride
18. ammonium dichromate
19. rubidium bromate
20. lead (II) permanganate
21. beryllium chlorite
22. cadmium iodide
23. phosphorus trichloride
24. lithium nitrite
25. tin (IV) sulfite
26. chromium (III) iodate
27. manganese (II) perchlorate
28. cobalt (II) hypochlorite
29. zinc selenide
30. magnesium cyanide

NAMING COMPOUNDS WORKSHEET

1. NaCl
2. $\text{Ba}_3(\text{PO}_4)_2$
3. $\text{Al}(\text{MnO}_4)_3$
4. $\text{Ni}(\text{ClO})_2$
5. CuSO_4
6. ZnCr_2O_7
7. MgSe
8. LiBrO_3
9. $(\text{NH}_4)_3\text{PO}_4$
10. AgHCO_3
11. $\text{Pb}(\text{NO}_3)_2$
12. $\text{Fe}(\text{C}_2\text{H}_3\text{O}_2)_3$
13. K_2CO_3
14. $\text{Co}(\text{ClO}_4)_2$
15. $\text{Be}(\text{NO}_2)_2$
16. Cu_2CrO_4
17. SrSO_3
18. $\text{Al}(\text{OH})_3$
19. RbNO_2
20. N_2O
21. FeBr_2
22. AgClO_2
23. N_2O_3
24. CaI_2



OXIDATION NUMBERS WORKSHEET

1.	HCl	Cl:	2.	H_2SO_3	S:
3.	KNO_3	N:	4.	H_2SO_4	S:
5.	$\text{Fe}(\text{OH})_3$	Fe:	6.	KMnO_4	Mn:
7.	Mg_3N_2	N:	8.	Li_2CO_3	C:
9.	KClO_3	Cl:	10.	PbO_2	Pb:
11.	$\text{Al}(\text{NO}_3)_3$	N:	12.	MnO_2	Mn:
13.	S_8	S:	14.	SO_3	S:
15.	NaHSO_4	S:	16.	Na:	Na:
17.	NH_3	N:			

PERCENT COMPOSITION WORKSHEET

Determine the percent composition of each of the following compounds.

- KMnO_4 K = Mn = O =
- HCl H = Cl =
- $\text{Mg}(\text{NO}_3)_2$ Mg = N = O =
- $(\text{NH}_4)_3\text{PO}_4$ N = H = P = O =
- $\text{Al}_2(\text{SO}_4)_3$ Al = S = O =

Solve the following problems.

- How many grams of oxygen can be produced from the decomposition of 75.0 g of KClO_3 ?
- How much iron can be recovered from 25.0 g of Fe_2O_3 ?
- How much silver can be recovered from 125 g of Ag_2S ?

EMPIRICAL FORMULAS WORKSHEET

Find the empirical formula for each of the following substances. The percent composition is given.

- 88.8 % copper & 11.2 % oxygen
- 10.04 % carbon, 0.84 % hydrogen, & 89.12 % chlorine
- 42.50 % chromium & 57.50 % chlorine
- 38.67 % potassium, 13.85 % nitrogen, & 47.48 % oxygen

Unit 7 – Chemical Formulas

Part 2 – Determine the empirical formula of the following compounds using the given data.

- Find the empirical formula for sodium sulfite. Sodium sulfite contains 36.5 % sodium, 25.4 % sulfur, and 38.1 % oxygen.
- What is the empirical formula for a compound which contains 53.73 % iron and 46.27 % sulfur?
- What is the empirical formula of a compound if the percentage composition is: aluminum 15.77 %, sulfur 28.11 %, and oxygen 56.12 %?
- If 8.87 grams of phosphorus react with 11.43 grams of oxygen, what is the empirical formula of the compound formed?
- Phosgene, a poisonous gas used during World War I, contains 12.1 % C, 16.2 % O, and 71.7% Cl. What is the empirical formula for phosgene?

MOLECULAR FORMULAS WORKSHEET

- A compound is found to be 40.0 % carbon, 6.7 % hydrogen, and 53.5 % oxygen. Its molecular mass is 60. grams per mole. What is its molecular formula?
- A compound is 64.9 % carbon, 13.5 % hydrogen, and 21.6 % oxygen. Its molecular mass is 74 grams per mole. What is its molecular formula?
- A compound is 54.5 % carbon, 9.1 % hydrogen, and 36.4 % oxygen. Its molecular mass is 88 grams per mole. What is its molecular formula?
- If the molecular mass of an oxide of nitrogen is 108. What is the molecular formula of a compound that contains 4.02 grams of nitrogen and 11.48 grams of oxygen?
- There are two different oxides of phosphorus. Both oxides can exist in different forms depending on the temperature and pressure. Calculate the empirical and molecular formulas from the following data:
(A) P: 56.4 %, O: 43.7 %, molecular mass = 220
(B) P: 43.6 %, O: 56.4 %, molecular mass = 284
- Nicotine is a compound that contains 74.0 % carbon, 8.7 % hydrogen, and 17.3 % nitrogen. If the molecular mass is 162, what is the molecular formula?

COMPOSITION OF HYDRATES WORKSHEET

- A 2.5 gram sample of a hydrate of $\text{Ca}(\text{NO}_3)_2$ was heated, and only 1.7 grams of the anhydrous salt remained. What percentage of water was in the hydrate?
- Strontium hydroxide is isolated as a hydrate, which means that a certain number of water molecules are included in the solid. When 6.85 grams of the hydrate are dried in an oven, 3.13 grams of anhydrous $\text{Sr}(\text{OH})_2$ are formed. What is the empirical formula for this hydrate?
- A 5.0 gram sample of $\text{Cu}(\text{NO}_3)_2 \cdot n \text{H}_2\text{O}$ is heated, and 3.9 gram sample of the anhydrous salt remains. What is the value of n?
- *4. A hydrated sodium salt containing 39.7 % water is analyzed as follows: Na 16.9 %, C 17.7 %, H 6.67 %, and O 58.8 %. What is the empirical formula of this salt?

ANSWERS TO SELECT WORKSHEETS:

PERCENT COMPOSITION WORKSHEET

- | | | | |
|---------------|------------|-----------|-----------|
| 1. K = 24.7% | Mn = 34.7% | O = 40.5% | |
| 2. H = 2.74% | Cl = 97.3% | | |
| 3. Mg = 16.4% | N = 18.9% | O = 64.7% | |
| 4. N = 28.2% | H = 8.05% | P = 20.8% | O = 43.0% |
| 5. Al = 15.8% | S = 28.1% | O = 56.1% | |
| 6. 29.4 g | 7. 17.5 g | 8. 109 g | |

EMPIRICAL FORMULAS WORKSHEET

- | | | | | | |
|---|----------------------------------|----------------------|---------------------|------------------------------------|-----------------------------------|
| 1. Cu ₂ O | 2. CHCl ₃ | 3. CrCl ₂ | 4. KNO ₃ | 5. Na ₂ SO ₃ | 6. Fe ₂ S ₃ |
| 7. Al ₂ S ₃ O ₁₂ | 8. P ₂ O ₅ | 9. COCl ₂ | | | |

MOLECULAR FORMULAS WORKSHEET

- | | | | | |
|---|-------------------------------------|---|------------------------------------|--|
| 1. C ₂ H ₄ O ₂ | 2. C ₄ H ₁₀ O | 3. C ₄ H ₈ O ₂ | 4. N ₂ O ₅ | 5. (A) Emp= P ₂ O ₃ , Mol= P ₄ O ₆ |
| 5. (B) Emp= P ₂ O ₅ , Mol= P ₄ O ₁₀ | | | 6. C ₅ H ₇ N | |

COMPOSITION OF HYDRATES WORKSHEET

- | | | | |
|--------|---|----------|---|
| 1. 32% | 2. Sr(OH) ₂ · 8 H ₂ O | 3. n = 3 | *4. NaC ₂ H ₃ O ₂ · 3 H ₂ O |
|--------|---|----------|---|