

Name _____ Date _____

REVIEW FORMULAS, F.W. AND PERCENTS

Part 1: Write the formulas for the following binary compounds

1. magnesium sulfide MgS

2. barium hypochlorite Ba(ClO)₂

3. magnesium chlorate Mg(ClO₃)₂

4. aluminum fluoride AlF₃

5. strontium phosphide Sr₃P₂

6. sodium sulfate Na₂SO₄

7. aluminum phosphate AlPO₄

8. ammonium carbonate (NH₄)₂CO₃

9. potassium bromide KBr

10. iron (II) iodide FeI₂

11. lead (II) sulfite PbSO₃

12. copper (I) sulfide Cu₂S

13. magnesium hydroxide Mg(OH)₂

14. aluminum nitride AlN

Part 2: Write the name of each of the following compounds

15. BeF_2 beryllium fluoride
16. Na_2O sodium oxide
17. Li_3N lithium nitride
18. RbCl rubidium chloride
19. BaO barium oxide
20. $(\text{NH}_4)_2(\text{C}_2\text{O}_4)$ ammonium oxalate
21. $\text{Al}_2(\text{SO}_4)_3$ aluminum sulfate
22. $\text{Be}(\text{NO}_3)_2$ beryllium nitrate
23. $\text{K}_2(\text{CO}_3)$ potassium carbonate
24. $\text{Mg}(\text{NO}_2)_2$ magnesium nitrite
25. $\text{H}_3(\text{PO}_4)$ hydrogen phosphate
26. $\text{Cr}(\text{OH})_3$ chromium III hydroxide
27. HNO_3 hydrogen nitrate
28. NaBr sodium bromide
29. SnO_2 tin IV oxide
30. $\text{Pb}(\text{NO}_3)_2$ lead II nitrate
31. NH_4ClO_4 ammonium perchlorate

Part 3: Name the following compounds and calculate the formula weights for the following:

32. $\text{Pb}(\text{C}_2\text{O}_4)_2$ lead IV oxalate

$$\begin{array}{r}
 \text{Pb} \quad 1 \times 207.20 = 207.20 \\
 \text{C} \quad 4 \times 12.01 = 48.04 \\
 \text{O} \quad 8 \times 16.00 = 128.00 \\
 \hline
 383.24
 \end{array}$$

33. $(\text{NH}_4)_2(\text{SO}_4)$ Ammonium sulfate

$$\begin{array}{r}
 \text{N} \quad 2 \times 14.01 = 28.02 \\
 \text{H} \quad 8 \times 1.01 = 8.08 \\
 \text{S} \quad 1 \times 32.06 = 32.06 \\
 \text{O} \quad 4 \times 16.00 = 64.00 \\
 \hline
 132.16
 \end{array}$$

34. $\text{Al}(\text{OH})_3$ aluminum hydroxide

$$\begin{array}{r}
 \text{Al} \quad 1 \times 26.98 = 26.98 \\
 \text{O} \quad 3 \times 16.00 = 48.00 \\
 \text{H} \quad 3 \times 1.01 = 3.03 \\
 \hline
 78.01
 \end{array}$$

35. $\text{Zn}_3(\text{PO}_4)_2 \cdot 4 \text{H}_2\text{O}$ Zinc phosphate tetrahydrate

$$\begin{array}{r}
 \text{Zn} \quad 3 \times 65.39 = 196.17 \\
 \text{P} \quad 2 \times 30.97 = 61.94 \\
 \text{O} \quad 8 \times 16.00 = 128.00 \\
 \hline
 386.11 \\
 \text{H} \quad 8 \times 1.01 = 8.08 \\
 \text{O} \quad 4 \times 16.00 = 64.00 \\
 \hline
 72.08 \\
 \hline
 386.11 + 72.08 = 458.19
 \end{array}$$

$$386.11 + 72.08 = 458.19$$

Part 4: calculate the percent composition for the following:

36. What is the percent of sodium in sodium chloride? NaCl

$$\begin{array}{l} \text{Na} \quad 1 \times 22.99 = 22.99 \\ \text{Cl} \quad 1 \times 35.45 = 35.45 \\ \hline 58.44 \end{array} \quad \frac{22.99}{58.44} \times 100 = 39.34\%$$

37. What is the percent of iron in iron III oxide? Fe_2O_3

$$\begin{array}{l} \text{Fe} \quad 2 \times 55.85 = 111.70 \\ \text{O} \quad 3 \times 16.00 = 48.00 \\ \hline 159.70 \end{array} \quad \frac{111.70}{159.70} \times 100 = 69.94\%$$

38. What is the percent water in calcium sulfate dihydrate?

$$\begin{array}{l} \text{Ca} \quad 1 \times 40.08 = 40.08 \\ \text{S} \quad 1 \times 32.06 = 32.06 \\ \text{O} \quad 4 \times 16.00 = 64.00 \\ \hline 136.14 \end{array} \quad \begin{array}{l} \text{H} \quad 4 \times 1.01 = 4.04 \\ \text{O} \quad 2 \times 16.00 = 32.00 \\ \hline 36.04 \end{array}$$

$$136.14 + 36.04 = 172.18$$

$$\frac{36.04}{172.18} \times 100 = 20.93\%$$

Part 5: Calculate the following

39. Calculate the percent of sugar in gum from the following data:
(SHOW ALL WORK OR NO CREDIT)

1	Mass of gum (before chewing)	8.73g
	Mass of gum (after chewing)	2.26g

$$\text{mass sugar} \\ 8.73 - 2.26 = 6.47\text{g}$$

$$\frac{6.47\text{g}}{8.73\text{g}} \times 100 = 74.11\%$$

40. Calculate percent error for the above data if the actual percent of sugar in gum is 75.00%. (SHOW ALL WORK OR NO CREDIT)

$$\frac{75.00 - 74.11}{75.00} \times 100 = 1.19\%$$

41. Calculate the percent oxygen in potassium chlorate from the following data:(SHOW ALL WORK OR NO CREDIT)

Mass t.t and catalyst	33.85g
Mass t.t., catalyst and KClO_3	47.41g
Mass t.t., catalyst and KCl	42.21g

$$\text{mass } \text{KClO}_3 \\ 47.41 - 33.85 = 13.56\text{g}$$

$$\text{mass oxygen} \\ 47.41 - 42.21 = 5.20\text{g}$$

$$\frac{5.20\text{g}}{13.56\text{g}} \times 100 = 38.35\%$$

42. Calculate the percent error in the above data (you need to calculate actual first!!)(SHOW ALL WORK OR NO CREDIT)

$$\begin{aligned}
 & 1 \times 39.10 = 39.10 \\
 & 1 \times 35.45 = 35.45 \\
 & 0 \quad 3 \times 16.00 = \underline{48.00} \\
 & \qquad \qquad \qquad 122.55
 \end{aligned}$$

$$\frac{48.00}{122.55} \times 100 = 39.1770$$

$$\frac{39.17 - 38.35}{39.17} \times 100 = 2.0970$$

43. Calculate the percent water in copper II sulfate pentahydrate from the following data:

Mass test tube	47.80g
Mass test tube and hydrate	50.16g
Mass test tube and anhydrate	49.31g

mass hydrate

$$50.16 - 47.80 = 2.36g$$

mass water

$$50.16 - 49.31 = 0.85g$$

$$\frac{0.85g}{2.36g} \times 100 = 36.02\%$$

44. Calculate the percent error in the above data (you need to calculate actual first!!)(SHOW ALL WORK OR NO CREDIT)

$$\begin{aligned}
 & 1 \times 63.55 = 63.55 \\
 & 1 \times 32.06 = 32.06 \\
 & 0 \quad 4 \times 16.00 = \underline{64.00} \\
 & \qquad \qquad \qquad 159.61
 \end{aligned}$$

$$\begin{aligned}
 & 4 \times 1.01 = 4.04 \\
 & 0 \quad 5 \times 16.00 = \underline{80.00} \\
 & \qquad \qquad \qquad 90.10
 \end{aligned}$$

$$159.61 - 90.10 = 249.71$$

$$\frac{90.10}{249.71} \times 100 = 36.08\%$$

$$\frac{36.08 - 36.02}{36.08} \times 100 = 0.17\%$$