KEY

Complete the following assignment in your class notebook with the heading:
Molar Mass and Mole Conversions

Show all work, including correct units and sig figs. A form of the question must be included in your answer. Box final answer. No work = No credit!

A. Calculate the molar mass for each of the following compounds:

1. zinc oxide, ZnO

$65.38\,g_{Zn} + 16.00\,g_{O} = \boxed{81.38\,g}$

2. magnesium chloride, $MgCl_2$

$\boxed{95.21\,g}$

3. water, H_2O

$2(1.01\,g)_{H} + 16.00\,g_{O} = \boxed{18.02\,g}$

4. carbon dioxide, CO_2

$\boxed{44.01\,g}$

5. sodium hypochlorite, NaClO

$22.99\,g_{Na} + 35.45\,g_{Cl} + 16.00\,g_{O} = \boxed{74.44\,g}$

6. nitric acid, HNO_3

$\boxed{63.02\,g}$

7. magnesium chlorate, $Mg(ClO_3)_2$

$24.31\,g_{Mg} + 2(35.45\,g)_{Cl} + 6(16.00\,g)_{O} = \boxed{191.21\,g}$

8. silver oxide, Ag_2O

$\boxed{231.74\,g}$

B. Perform the following conversions, using proper dimensional analysis:

9. Find the mass of 0.89 mol $CaCl_2$

$40.08g + 2(35.45) = 110.98g$

$0.89 \text{ mol } CaCl_2 \times \frac{110.98g\ CaCl_2}{1 \text{ mol } CaCl_2} =$ **99 g $CaCl_2$**

10. Find the mass of 1.112 mol of HF.

22.25 g HF

11. Determine the number of moles of C_5H_{12} that are in 362.8 grams.

$5(12.01g) + 12(1.01g) = 72.17g$

$362.8g\ C_5H_{12} \times \frac{1 \text{ mol } C_5H_{12}}{72.17g\ C_5H_{12}} =$ **5.027 mol C_5H_{12}**

12. Find the mass of 0.159 mol of SiO_2

9.55 g SiO_2

13. How many moles of hydrogen are in 12.35 grams of C_2H_4?

1.761 mol H

14. Determine the number of total atoms in 0.98 moles of N_2.

1.2×10^{24} atoms

15. How many moles of fluorine are in 2.24 grams of OF_2?

$16.00g + 2(19.00g) = 54.00g$

$2.24g\ OF_2 \times \frac{1 \text{ mol } OF_2}{54.00g\ OF_2} \times \frac{2 \text{ mol F}}{1 \text{ mol } OF_2} =$ **0.0830 mol F**

16. How many total atoms are in 0.78 moles of N_2O?

$0.78 \text{ mol } N_2O \times \frac{6.02 \times 10^{23} \text{ molecules } N_2O}{1 \text{ mol } N_2O} \times \frac{3 \text{ atoms}}{1 \text{ molecule } N_2O} =$ **1.4×10^{24} atoms**