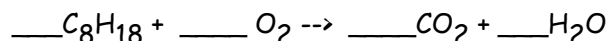


CHM 1020  
Practice for Parts 8 & 9  
Memorize the names and symbols of elements 1-54

1. How many molecules of water are in 1.00 grams of water (1 mL)?
2. How many atoms are there in one mole of sodium?
3. What is the mass of one mole of carbon-12 atoms?
4. What is the mass of one mole of nitrogen dioxide?
5. What is the mass of one mole of carbon dioxide?
6. What is the mass of one mole of oxygen molecules?
7. What is the formula weight of  $\text{CO}_2$ ?
8. What is the formula weight of  $\text{NO}_2$ ?
9. What is the formula weight of  $\text{Ca}(\text{OH})_2$ ?
10. Please balance the following equation.



11. Consider the reaction:  
 $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$   
How many grams of  $\text{NH}_3$  are produced from the reaction of 5.40 g of  $\text{H}_2$ ? (Assume hydrogen is the limiting reagent)
12. How many grams of nickel (II) chloride were reacted to produce 800. grams of silver chloride by the balanced reaction shown below?  
$$2 \text{AgNO}_{3(\text{aq})} + \text{NiCl}_{2(\text{aq})} \rightarrow 2 \text{AgCl}_{(\text{s})} + \text{Ni}(\text{NO}_3)_{2(\text{aq})}$$
13. A solution containing excess sodium sulfate is added to a solution containing 4 grams of barium nitrate. How many grams of barium sulfate are produced by the balanced reaction shown below?  
$$\text{Ba}(\text{NO}_3)_{2(\text{aq})} + \text{Na}_2\text{SO}_{4(\text{aq})} \rightarrow \text{BaSO}_{4(\text{s})} + 2 \text{NaNO}_{3(\text{aq})}$$
14. How many grams of antimony III chloride are produced from the reaction of 129 grams antimony with an excess of chlorine gas? The balanced chemical reaction is shown below.  
$$2 \text{Sb}_{(\text{s})} + 3 \text{Cl}_{2(\text{g})} \rightarrow 2 \text{SbCl}_{3(\text{s})}$$
15. In the following "redox" reactions, determine
  - a. Which substance is reduced?
  - b. Which substance is oxidized?
  - c. Which substance is the reducing agent?
  - d. Which substance is the oxidizing agent?

1.  $\text{Zn}_{(s)} + \text{Cu}(\text{NO}_3)_{2(aq)} \rightarrow \text{Cu}_{(s)} + \text{Zn}(\text{NO}_3)_{2(aq)}$
2.  $\text{CoSO}_{4(aq)} + \text{Sn}_{(s)} \rightarrow \text{Co}_{(s)} + \text{SnSO}_{4(aq)}$
3.  $\text{C}_6\text{H}_{12}\text{O}_6(aq) + 6 \text{O}_{2(g)} \rightarrow 6 \text{H}_2\text{O}_{(l)} + 6 \text{CO}_{2(g)}$
4.  $\text{CH}_4(g) + 2 \text{O}_2(g) \rightarrow \text{CO}_2(g) + 2 \text{H}_2\text{O}_{(l)}$

16. Classify the following reactions by driving force. The choices are

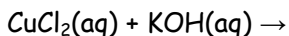
- a. Formation of a precipitate
- b. Formation of a gas
- c. Acid-base neutralization
- d. Oxidation-reduction ("redox")

1.  $\text{Mg}_{(s)} + 2 \text{HCl}_{(aq)} \rightarrow \text{MgCl}_{2(aq)} + \text{H}_{2(g)}$
2.  $\text{Pb}(\text{NO}_3)_{2(aq)} + 2 \text{KI}_{(aq)} \rightarrow \text{PbI}_{2(s)} + 2 \text{KNO}_{3(aq)}$
3.  $\text{HCl}_{(aq)} + \text{NaOH}_{(aq)} \rightarrow \text{NaCl}_{(aq)} + \text{H}_2\text{O}_{(l)}$
4.  $\text{Fe}_{(s)} + \text{CuSO}_{4(aq)} \rightarrow \text{FeSO}_{4(aq)} + \text{Cu}_{(s)}$
5.  $2 \text{Mg}_{(s)} + \text{O}_{2(g)} \rightarrow 2 \text{MgO}_{(s)}$
6.  $\text{NiCl}_{2(aq)} + 2 \text{NaOH}_{(aq)} \rightarrow \text{Ni}(\text{OH})_{2(s)} + 2 \text{NaCl}_{(aq)}$
7.  $\text{Na}_2\text{CO}_{3(aq)} + \text{CaCl}_{2(aq)} \rightarrow \text{CaCO}_{3(s)} + 2 \text{NaCl}_{(aq)}$

17. Classify the reactions in problem 6 by reaction type. The choices are

- a. Combination
- b. Decomposition
- c. Single Replacement
- d. Double Replacement
- e. *Combustion*

18. What are the products, include the phases(s, g, l, aq) and balance the equation:



19. Mix the following aqueous solutions: determine what the products will be; determine the states of the products using rules of solubility; write a complete and balanced chemical equation.

- a.  $\text{CuSO}_4$  and  $\text{NaOH}$
- b.  $\text{HNO}_3$  and  $\text{NaOH}$
- c.  $\text{Na}_2\text{SO}_4$  and  $\text{BaCl}_2$
- d.  $\text{KOH}$  and  $\text{MgCl}_2$