CHEMICAL REACTIONS REVIEW WORKSHEET ANSWERS

Part I: Balance the following equations

1. 2, 1 ---› 2
2. 1, 12 ---› 8
3. 2 ---› 2, 1
4. 1, 2 ---› 1, 1
5. 2, 2 ---› 2, 1
6. 1, 8 ---› 10, 16
7. 4, 11 ---› 8, 6
8. 4, 3 ---› 2
9. 2, 15 ---› 14, 6
10. 1, 3 ---› 2
11. 2, 1 ---› 2
12. 6, 6 ---› 1, 6
13. 1, 4 ---› 1, 4
14. 2 ---› 1, 1
15. 1, 2 ---› 1, 1
16. 2, 3 ---› 1, 6
17. 1, 6 ---› 3, 2
18. 1, 8 ---› 1, 4, 4

Part II: Write balanced equations for the following word equations

1. potassium chloride + silver nitrate --› potassium nitrate + silver chloride
   $KCl + AgNO_3 \rightarrow KNO_3 + AgCl$
2. aluminum hydroxide + sodium nitrate --› aluminum nitrate + sodium hydroxide
   $Al(OH)_3 + 3\ NaNO_3 \rightarrow Al(NO_3)_3 + 3\ NaOH$
3. iron metal + copper(II) sulfate -->iron(II) sulfate + copper metal
   $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$
4. aluminum metal + copper(II) chloride --› aluminum chloride + copper metal
   $2\ Al + 3\ CuCl_2 \rightarrow 2\ AlCl_3 + 3\ Cu$

Part III: identify the type of reaction and balance

1) $2H_2O\ (l) \rightarrow 2H_2\ (g) + O_2\ (g)$; **decomposition**
2) $2NaCl\ (aq) + H_2\ (g) \rightarrow 2HCl\ (aq) + 2Na\ (s)$ **single replacement**
3) $C_2H_4 + 3O_2 \rightarrow 2CO_2 + 2H_2O$ **combustion**
4) $2Mg_{(s)} + O_{2(g)} \rightarrow 2MgO_{(s)}$ **synthesis**
5) $Ca(OH)_{2(s)} \rightarrow CaO_{(s)} + H_2O_{(g)}$ **decomposition/ gas formation**
6) $2NaCl + H_2SO_4 \rightarrow Na_2SO_4 + 2HCl$ **double replacement**
7) $HCl + NaOH \rightarrow H_2O + NaCl$ **acid base/ double replacement**
8) $HBr + NaOH \rightarrow NaBr + H_2O$ **acid base double replacement**
9) $Ba(NO_3)_2\ (aq) + CuSO_4\ (aq) \rightarrow BaSO_4(s) + Cu(NO_3)_2(aq)$ **precipitation/ double replacement**

Part IV: Write a complete, balanced equation for the following and identify the type of reaction

1) zinc and copper II sulfate yield zinc sulfate and copper metal
   $Zn + CuSO_4 \longrightarrow ZnSO_4 + Cu$ SINGLE REPLACEMENT
2) Chlorine gas and sodium bromide yield sodium chloride and bromine
   $Cl_2 + 2\ NaBr \longrightarrow 2\ NaCl + Br_2$ SINGLE REPLACEMENT
3) aluminum hydroxide and sulfuric acid neutralize to make water and aluminum sulfate.
   $2\ Al(OH)_3 + 3\ H_2SO_4 \longrightarrow 6\ H_2O + Al_2(SO_4)_3$ DOUBLE REPLACEMENT OR ACID-BASE NEUTRALIZATION

Part V: Knowing the type of reactions; identify the products of the reaction and balance the reaction

1) Synthesis; $4Al + 3O_2 \rightarrow 2Al_2O_3$
2) Decomposition $2H_2O \rightarrow 2H_2 + O_2$
3) Single Replacement $2NaBr + Cl_2 \rightarrow 2NaCl + Br_2$
4) Double replacement $2KCl + H_2SO_4 \rightarrow K_2SO_4 + 2HCl$
5) Combustion $C_2H_4 + 3O_2 \rightarrow 2CO_2 + 2H_2O$

Part VI: Predict the product:

1) Aluminum Hydroxide + acetic acid =

$Al(OH)_3 + 3HC_2H_3O_2 \rightarrow 3H_2O + Al(C_2H_3O_2)_3$