Balancing Equations Worksheet – Review#2

1. **When sulfur trioxide (SO_3), which is present in smoggy air in trace concentrations, reacts with water, sulfuric acid (H_2SO_4), a very corrosive acid, forms as the only product. Write a balanced equation for this reaction and describe its stoichiometry in words.**
2. **Write the following word equation in chemical formulas, "Iron can be made to react with molecular oxygen to give iron oxide having the formula Fe_2O_3."**
3. **Balance the following skeleton equations:**

   (a) $SO_2 + O_2 \rightarrow SO_3$
   (b) $Mg + O_2 \rightarrow MgO$
   (c) $NO + O_2 \rightarrow NO_2$
   (d) $HgO \rightarrow Hg + O_2$
   (e) $N_2 + H_2 \rightarrow NH_3$
   (f) $P + O_2 \rightarrow P_4O_{10}$
   (g) $KClO_4 \rightarrow KCl + O_2$
   (h) $PbO_2 \rightarrow PbO + O_2$

4. **Write the balanced equation for the formation of table salt, NaCl (sodium chloride), from sodium (Na), and gaseous chlorine (Cl_2).**
5. **Although bright and shiny, aluminum objects are covered with a tight, invisible coating of aluminum oxide, (Al_2O_3) that forms when freshly exposed aluminum (Al) reacts with oxygen. Balance this.**
6. **Balance these equations.**

   a) $Sn(s) + O_2(g) \rightarrow SnO(s)$
   b) $Ca(s) + Br_2(g) \rightarrow CaBr_2(s)$
   c) $P_4(s) + Cl_2(g) \rightarrow PCl_5(g)$
   d) $C(s) + O_2(g) \rightarrow CO_2(g)$

7. **Balance the following equations.**

   a) $Zn + S \rightarrow ZnS$
   b) $H_2 + P \rightarrow PH_3$
   c) $As + O_2 \rightarrow As_2O_3$
   d) $H_2 + S \rightarrow H_2S$
   e) $Na + O_2 \rightarrow Na_2O$
   f) $O_2 \rightarrow O_3$
   g) $As + H_2 \rightarrow AsH_3$
   h) $Sb + O_2 \rightarrow Sb_2O_3$

… more balancing…

1. **Balance the following equations:**

   (a) $Ca(OH)_2 + HCl \rightarrow CaCl_2 + H_2O$
   (b) $AgNO_3 + CaCl_2 \rightarrow Ca(NO_3)_2 + AgCl$
   (c) $Fe_2O_3 + C \rightarrow Fe + CO_2$
   (d) $P_4O_{10} + H_2O \rightarrow H_3PO_4$
   (e) $Pb(NO_3)_2 + Na_2SO_4 \rightarrow PbSO_4 + NaNO_3$
   (f) $Fe_2O_3 + H_2 \rightarrow Fe + H_2O$
   (g) $Al + H_2SO_4 \rightarrow Al_2(SO_4)_3 + H_2$

2. **Balance the following equations:**

   (a) $Mg(OH)_2 + HBr \rightarrow MgBr_2 + H_2O$
   (b) $Al_2O_3 + H_2SO_4 \rightarrow Al_2(SO_4)_3 + H_2O$
   (c) $KHCO_3 + H_3PO_4 \rightarrow K_2HPO_4 + H_2O + CO_2$
   (d) $C_9H_{20} + O_2 \rightarrow CO_2 + H_2O$

3. **Balance the following equations:**

   (a) $CaO + HNO_3 \rightarrow Ca(NO_3)_2 + H_2O$
   (b) $Na_2CO_3 + Mg(NO_3)_2 \rightarrow MgCO_3 + NaNO_3$
   (c) $(NH_4)_3PO_4 + NaOH \rightarrow Na_3PO_4 + NH_3 + H_2O$
   (d) $LiHCO_3 + H_2SO_4 \rightarrow Li_2SO_4 + H_2O + CO_2$
   (e) $C_4H_{10} + O_2 \rightarrow CO_2 + H_2O$