Balancing Equations by the Oxidation State Method -I

Name:_____

PLEASE INDICATE OA, RA, AND NUMBER ELECTRONS TRANSFERRED PER FORMULA UNIT.

1. __ $C_6H_{12}O_{6(s)}$ + __ $O_{2(g)}$ $\longrightarrow$ __ $CO_{2(g)}$ + __ $H_2O_{(l)}$

2. __ $AuBr_{3(aq)}$ + __ $SO_{2(aq)}$ + __ $H_2O_{(l)}$ $\longrightarrow$ __ $H_2SO_{4(aq)}$ + __ $HBr_{(aq)}$ + __ $Au_{(s)}$

3. __ $BrO_3^-{}_{(aq)}$ + __ $C_2H_6O_{(aq)}$ $\longrightarrow$ __ $CO_{2(g)}$ + __ $Br^-{}_{(aq)}$ + __ $H_2O_{(l)}$

4. __ $Ag_{(s)}$ + __ $NO_3^-{}_{(aq)}$ + __ $H^+{}_{(aq)}$ $\longrightarrow$ __ $Ag^+{}_{(aq)}$ + __ $NO_{(g)}$ + __ $H_2O_{(l)}$

5. __ $HNO_{3(aq)}$ + __ $SO_{2(g)}$ + __ $H_2O_{(l)}$ $\longrightarrow$ __ $H_2SO_{4(aq)}$ + __ $NO_{(g)}$

6. __ $Al_{(s)}$ + __ $O_{2(g)}$ $\longrightarrow$ __ $Al_2O_{3(s)}$

7. __ $CH_3OH_{(l)}$ + __ $MnO_4^-{}_{(aq)}$ + __ $OH^-{}_{(aq)}$ $\longrightarrow$ __ $CO_3^{2-}{}_{(aq)}$ + __ $MnO_4^{2-}{}_{(aq)}$ + __ $H_2O_{(l)}$

8. __ $Cr_2O_7^{2-}{}_{(aq)}$ + __ $H^+{}_{(aq)}$ + __ $C_2H_5OH_{(l)}$ $\longrightarrow$ __ $Cr^{3+}{}_{(aq)}$ + __ $H_2O_{(l)}$ + __ $CH_3COOH_{(aq)}$

9. __ $S_{8(s)}$ + __ $KMnO_{4(aq)}$ + __ $HCl_{(aq)}$ $\longrightarrow$ __ $SO_{2(g)}$ __ $MnCl_{2(s)}$ + __ $KCl_{(aq)}$ + __ $H_2O_{(l)}$
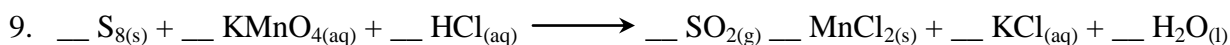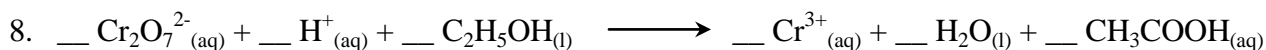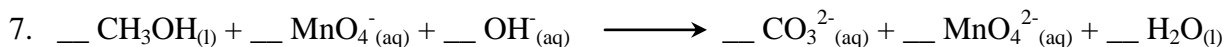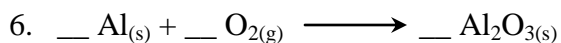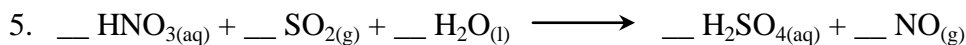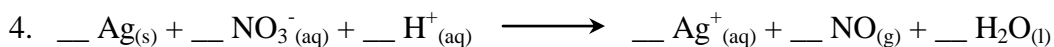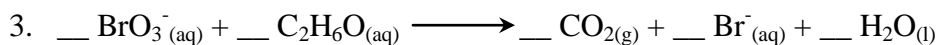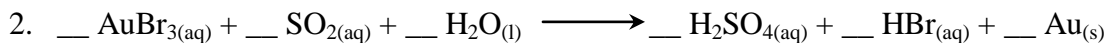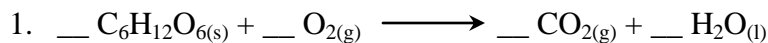
Balancing Equations by the Oxidation State Method - II

Name:_____

PLEASE INDICATE OA, RA, AND NUMBER ELECTRONS TRANSFERRED PER FORMULA UNIT.

1. __ $H_{2(g)}$ + __ $Fe_2O_{3(aq)}$ $\longrightarrow$ __ $FeO_{(s)}$ + __ $H_2O_{(g)}$

2. __ $HBr_{(aq)}$ + __ $H_2SO_{4(aq)}$ $\longrightarrow$ __ $SO_{2(g)}$ + __ $Br_{2(aq)}$ + __ $H_2O_{(l)}$

3. __ $MnO_4^-{}_{(aq)}$ + __ $H^+{}_{(aq)}$ + __ $CH_3OH_{(l)}$ $\longrightarrow$ __ $Mn^{2+}{}_{(aq)}$ + __ $H_2O_{(l)}$ + __ $CH_2O_{(aq)}$

4. __ $IO_3^-{}_{(aq)}$ + __ $HSO_3^-{}_{(aq)}$ $\longrightarrow$ __ $SO_4^{2-}{}_{(aq)}$ + __ $H^+{}_{(aq)}$ + __ $I_{2(aq)}$ + __ $H_2O_{(l)}$

5. __ $I_{2(aq)}$ + __ $HSO_3^-{}_{(aq)}$ + __ $H_2O_{(l)}$ $\longrightarrow$ __ $I^-{}_{(aq)}$ + __ $SO_4^{2-}{}_{(aq)}$ + __ $H^+{}_{(aq)}$

6. __ $NH_{3(g)}$ + __ $O_{2(g)}$ $\longrightarrow$ __ $NO_{2(g)}$ + __ $H_2O_{(g)}$

7. __ $C_2H_5OH_{(l)}$ + __ $H^+{}_{(aq)}$ + __ $NO_3^-{}_{(aq)}$ $\longrightarrow$ __ $CH_3COOH_{(aq)}$ + __ $NO_{2(g)}$ + __ $H_2O_{(l)}$

8. __ $ClO^-{}_{(aq)}$ $\longrightarrow$ __ $ClO_3^-{}_{(aq)}$ + __ $Cl^-{}_{(aq)}$

9. __ $Cu_{(s)}$ + __ $HNO_{3(aq)}$ $\longrightarrow$ __ $Cu(NO_3)_{2(aq)}$ + __ $NO_{(g)}$ + __ $H_2O_{(l)}$