Name _____ Date _____ Class _____

20 Practice Problems

1. Balance the following equation and identify the element oxidized and the oxidizing agent.

   $Cu + HNO_3 \rightarrow Cu(NO_3)_2 + NO_2 + H_2O$

2. Balance the following equation and identify the element oxidized and the oxidizing agent.

   $Cu + H_2SO_4 \rightarrow CuSO_4 + SO_2 + H_2O$

3. Balance the following equation and identify the element oxidized and the oxidizing agent. The reaction occurs in an acidic solution.

   $Fe^{2+} + MnO_4^- \rightarrow Fe^{3+} + Mn^{2+}$

4. Balance the following equation and identify the element oxidized and the oxidizing agent. The reaction occurs in an acidic solution.

   $SO_3^{2-} + MnO_4^- \rightarrow SO_4^{2-} + Mn^{2+}$

5. Balance the following equation and identify the element oxidized and the oxidizing agent. The reaction occurs in an acidic solution.

   $Zn + NO_3^- \rightarrow Zn^{2+} + N_2O$

6. Balance the following equation and identify the element oxidized and the oxidizing agent. The reaction occurs in an acidic solution.

   $MnO_4^- + I^- \rightarrow MnO_2 + IO^-$

7. Balance the following equation and identify the element oxidized and the oxidizing agent. The reaction occurs in an acidic solution.

   $P + NO_3^- \rightarrow H_2PO_4^- + NO$

8. Balance the following equation and identify the element oxidized and the oxidizing agent. The reaction occurs in an acidic solution.

   $NO_3^- + I_2 \rightarrow IO_3^- + NO_2$

9. Balance the following equation and identify the element oxidized and the oxidizing agent. The reaction occurs in an acidic solution.

   $I^- + ClO^- \rightarrow IO_3^- + Cl^-$

10. Balance the following equation and identify the element oxidized and the oxidizing agent. The reaction occurs in an acidic solution.

    $SO_3^{2-} + MnO_4^- \rightarrow SO_4^{2-} + MnO_2$

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2 *Review and Reinforcement (continued)*

Balance the following equations in the space provided.

_____ BrO_3^- + _____ Sb^{3+} → _____ Br^- + _____ Sb^{5+} (in acidic solution)

_____ C_2H_4 + _____ MnO_4^- → _____ CO_2 + _____ Mn^{2+} (in acidic solution)

_____ NaOH + _____ $Ca(OH)_2$ + _____ C + _____ ClO_2 → _____ $NaClO_2$

+ _____ $CaCO_3$ + _____ H_2O

_____ CrO_4^{2-} + _____ Cl^- → _____ Cr^{3+} + _____ $HClO_2$ (in acidic solution)

_____ $Cd(s)$ + _____ $AgCl(aq)$ → _____ $Cd^{2+}(aq)$ + _____ $Ag(s)$ + _____ $Cl^-(aq)$

_____ MnO_4^- + _____ Cl^- → _____ Mn^{2+} + _____ Cl_2 (in acidic solution)

Balance the following equation, which occurs in a basic solution.

_____ $MnO_4^-(aq)$ + _____ $Zn(s)$ + _____ $H_2O(l)$ → _____ $MnO_2(s)$ + _____ $Zn(OH)_2(s)$