## Balancing Redox Reactions Worksheet 1

Balance each redox reaction in acid solution.

$$Mn^{2+} + BiO_{3}^{-} \rightarrow MnO_{4}^{-} + Bi^{3+}$$

$$MnO_{4}^{-} + S_{2}O_{3}^{2-} \rightarrow S_{4}O_{6}^{2-} + Mn^{2+}$$

$$CIO_{3}^{-} + CI^{-} \rightarrow CI_{2} + CIO_{2}$$

$$P + Cu^{2+} \rightarrow Cu + H_{2}PO_{4}^{-}$$

$$PH_{3} + I_{2} \rightarrow H_{3}PO_{2}^{-} + I^{-}$$

$$NO_{2} \rightarrow NO_{3}^{-} + NO$$

$$Basic Solutions$$

$$MnO_{4}^{-} + C_{2}O_{4}^{2-} \rightarrow MnO_{2} + CO_{2}$$

$$CIO_{2} \rightarrow CIO_{2}^{-} + CIO_{3}^{-}$$

$$Cu(NH_{3})_{4}^{2+} + S_{2}O_{4}^{2-} \rightarrow SO_{3}^{2-} + Cu + NH_{3}$$

$$Zn + NO_{3}^{-} \rightarrow Zn(OH)_{4}^{2-} + NH_{3}$$

$$AI + OH^{-} \rightarrow AIO_{2}^{-} + H_{2}$$

$$Zn \rightarrow Zn(OH)_{4}^{2-} + H_{2}$$

$$Answers \text{Acidic:}$$

$$^{1} H^{+} + ^{2} MnO_{4}^{2+} + ^{1} S_{1}SO_{3}^{2-} \rightarrow ^{2} MnO_{4}^{-} + ^{1} S_{1}S_{1}^{3+} + ^{7} H_{2}O$$

$$^{1} H^{+} + ^{2} MnO_{4}^{2-} + ^{1} S_{1}SO_{3}^{2-} \rightarrow ^{2} MnO_{4}^{2-} + ^{1} S_{1}S_{1}^{3+} + ^{7} H_{2}O$$

$$^{1} H^{+} + ^{2} CIO_{3}^{-} + ^{2} CI^{-} \rightarrow ^{2} CIO_{2} + ^{2} H_{2}O + ^{2} CIO_{2}$$

$$^{1} H_{2}O + ^{2} PH_{3} + ^{3} I_{2} \rightarrow ^{2} H_{3}PO_{2}^{-} + ^{1} S_{1}^{4+} + ^{1} S_{1}^{4-} +$$

## Balancing Redox Reactions Worksheet 2

Balance each redox reaction in <u>acid</u> solution.

$$H_2O_2 + Cr_2O_7^{2-} \rightarrow O_2 + Cr^{3+}$$
 $TeO_3^{2-} + N_2O_4 \rightarrow Te + NO_3^{-}$ 
 $ReO_4^{-} + IO^{-} \rightarrow IO_3^{-} + Re$ 
 $PbO_2 + I_2 \rightarrow Pb^{2+} + IO_3^{-}$ 
 $As \rightarrow H_2AsO_4^{-} + AsH_3$ 

Balance each redox reaction in <u>basic</u> solution.

$$O_{2} + Cr^{3+} \rightarrow H_{2}O + Cr_{2}O_{7}^{2-}$$
 $Te + NO_{3}^{-} \rightarrow TeO_{3}^{2-} + N_{2}O_{4}$ 
 $IO_{3}^{-} + Re \rightarrow ReO_{4}^{-} + IO^{-}$ 
 $Pb^{2+} + IO_{3}^{-} \rightarrow PbO_{2} + I_{2}$ 
 $Cr_{2}O_{7}^{2-} + Hg \rightarrow Hg^{2+} + Cr^{3+}$ 

## Answers: