1. Balance the following reactions using the oxidation number method.

a. NaClO + $H_2S \rightarrow NaCl + H_2SO_4$

b. Sn + HNO₃ + H₂O \rightarrow H₂SnO₃ + NO

c. $K_2Cr_2O_7$ + $SnCl_2$ + $HCl \rightarrow CrCl_3$ + $SnCl_4$ + KCl + H_2O

- 2. Balance the following half-reactions. Be sure to balance for atoms first, then balance for charge by adding electrons to the appropriate side of the equation. Also identify each as either an oxidation or reduction.
 - a. $Br_2 \rightarrow Br^-$
 - b. $Fe^{2+} \rightarrow Fe^{3+}$
 - c. $MnO_4^- + H^+ \rightarrow Mn^{2+} + H_2O$
- 3. Break each equation into two half-reactions. Identify each half-reaction as oxidation or reduction.
 - a. $2 \text{ K} + \text{I}_2 \rightarrow 2 \text{ KI}$
 - b. $2 Br^- + F_2 \rightarrow Br_2 + 2 F^-$

- 4. Balance the following reactions using the half-reaction method.
 - a. Na + $Br_2 \rightarrow NaBr$

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b. CrO_4^{2-} + H⁺ + Cl⁻ \rightarrow Cr³⁺ + Cl₂ + H₂O

Remember to balance for atoms before adding electrons to balance for charge.

5. Balance the following reactions using either the oxidation number method or the half-reaction method.

a. NO + As + $H_2O \rightarrow N_2O$ + $HAsO_2$

b. $Ce^{4+} + I^- + OH^- \rightarrow Ce^{3+} + IO_3^- + H_2O$