Balancing Redox Equations

Practice: *Balance the following redox reactions. Remember that you do not include the spectator ions in your half reactions. The first one is done for you.*

Example:

First assign oxidation states:

0 +1 -1 +2 -1 0

$Cu + AgNO_3 \rightarrow Cu(NO_3)_2 + Ag$

Oxidation: $1(Cu^0 \rightarrow Cu^{+2} + 2e^-) = Cu^0 \rightarrow Cu^{+2} + 2e^-$

Reduction: $2(Ag^{+1} + 1e^- \rightarrow 2Ag^0) = \mathbf{2}Ag^{+1} + 2e^- \rightarrow \mathbf{2}Ag^0$

Then plug coefficients back into original equation to balance the reaction.

Answer: $Cu + \mathbf{2}AgNO_3 \rightarrow Cu(NO_3)_2 + \mathbf{2}Ag$

1. $PbO + CO \rightarrow Pb + CO_2$

2. $MgCl_2 + Cr \rightarrow Mg + CrCl_3$

3. $Pb + AgNO_2 \rightarrow Pb(NO_2)_2 + Ag$

4. $CsF + Na \rightarrow NaF + Cs$

5. $NaCl + Br_2 \rightarrow NaBr + Cl_2$

6. $Fe^{+2} + Cu^{+} \rightarrow Fe^{+3} + Cu$

7. $Cr + CuBr_2 \rightarrow CrBr_3 + Cu$

8. $Zn + CuO \rightarrow ZnO + Cu$

REGENTS PRACTICE

1. Given the unbalanced ionic equation:

When this equation is balanced, both Fe^{3+} and Fe have a coefficient of

A) 1, because a total of 6 electrons is transferred
B) 2, because a total of 6 electrons is transferred
C) 1, because a total of 3 electrons is transferred
D) 2, because a total of 3 electrons is transferred

2. Which expression correctly represents a balanced reduction half-reaction?

A) $Na^+ + e^- \rightarrow Na$ B) $Na \rightarrow Na^+ + e^-$
C) $Cl_2 + 2e^- \rightarrow Cl^-$ D) $2\ Cl^- \rightarrow Cl_2 + 2e^-$

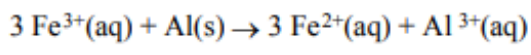
3. Which equation shows conservation of charge?

A) $Fe \rightarrow Fe^{2+} + e^-$ B) $Fe + 2e^- \rightarrow Fe^{2+}$
C) $Fe \rightarrow Fe^{2+} + 2e^-$ D) $Fe + 2e^- \rightarrow Fe^{3+}$

4. Which half-reaction shows both the conservation of mass and the conservation of charge?

A) $Cl_2 + 2e^- \rightarrow 2\ Cl$ B) $Cl_2 \rightarrow Cl^- + 2e^-$
C) $2\ Br^- + 2e^- \rightarrow Br_2$ D) $Br^- \rightarrow Br_2 + 2e^-$

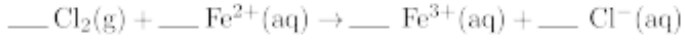
5. Given the balanced equation:



What is the total number of moles of electrons lost by 2 moles of Al(s)?

A) 1 mole B) 6 moles
C) 3 moles D) 9 moles

6. Given the reaction:



When the equation is correctly balanced using *smallest* whole numbers, the coefficient of $Cl^-(aq)$ will be

A) 1 B) 2 C) 6 D) 7

ASSESS YOURSELF ON THIS LESSON:

If you missed any regents practice questions you should see me for extra help and/or re-watch the lesson video assignment