

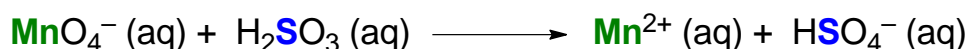
CONCEPT: BALANCING REDOX REACTIONS: ACIDIC SOLUTIONS

- **Balancing Redox Reactions** requires a new approach that accounts for the transfer of electrons between reactants.
 - For **Acidic Redox Reactions** we generally have the presence of the _____ ion.
 - Redox reactions not only balance the atoms of elements, but also _____ and _____.

Half-Reactions

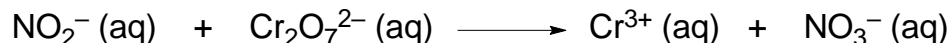
- Balancing a redox reaction begins with identifying its *half reactions*.
 - **Half Reaction:** Either the oxidation or reduction reaction portion of a redox reaction.
 - Usually a half reaction is obtained by identifying the elements that are not _____ or _____.

EXAMPLE: Identify the half reactions from the following redox reaction.



Balancing Acidic Redox Reactions

EXAMPLE: Balance the following redox reaction if it is found to be in an acidic solution.



STEP 1: Break the full redox reaction into 2 half reactions.

- Focus on the elements that are not **oxygen** or **hydrogen** to determine the 2 half-reactions.

STEP 2: For each half reaction, balance elements that are not **oxygen** or **hydrogen**.

STEP 3: For each half reaction, balance the number **oxygens** by adding _____.

STEP 4: For each half reaction, balance the number **hydrogens** by adding _____.

STEP 5: Balance the overall charge by adding **electrons** to the more _____ charged side of each half reaction.

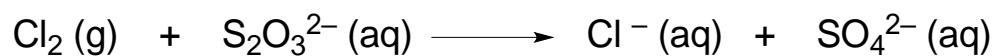
- If the number of electrons of both half reactions differ then multiply to get the lowest common multiple.

STEP 6: Combine the half reactions and cross out *reaction intermediates*.

- **Reaction Intermediates:** Compounds that look the same, with one as a reactant and the other a product.

CONCEPT: BALANCING REDOX REACTIONS: ACIDIC SOLUTIONS

PRACTICE: Balance the following redox reaction in an acidic solution.



PRACTICE: What is the coefficient of Fe^{3+} when the following reaction is balanced?

