Worksheet to teach balancing equations: Redox reactions in acidic and basic medium

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- Start Internet Explorer or Netscape and go to www.dorjegurung.com/chemistry/IB_year1/balancing_equation_games/index.htm.

 2. Click 'Directions'. Read and understand the directions.
- 3. Click 'OK'.
- 4. Click on 'Redox reactions in acidic and basic mediums.'
- Try entering some numbers in the text boxes in front of each molecule. What happens?
- 6. If you forget the directions, click on the 'How to Play the Game' link. Click 'OK' when you finish reading them to return to the game.
- When you think you have typed the right numbers in all the boxes, click the 'Balanced' button.
- 8. If you didn't get it right, try again.
- If you did get it right, then fill in the correct answers on this worksheet for #1.
- 10. Repeat steps 7-9 for the rest of the questions that appear in the game.
- 11. Now do the rest of problems on this worksheet that don't appear in the game. You can draw the molecules just like the program did to figure out the answer. (Do not worry about getting the diagram of the molecules correct at this time.)

Questions

The equations that appear in the game are listed below. Do two things:

- 1. Fill in the blanks below as you go through the game. This is so I have a record that you did
- your assignment, and
 2. determine the oxidation states of all the atoms involved and identify oxidation, reduction, oxidizing agent, and reducing agent.

$$1. \ \ __Cr_2O_7{}^{2-}{}_{(aq)} + \ __\Gamma{}_{(aq)} + \ __H^+{}_{(aq)} \to \ __Cr^{3+}{}_{(aq)} + \ __IO_3{}^-{}_{(aq)} + \ __H_2O{}_{(l)}$$

$$2. \ \ \, \underline{\hspace{0.3cm}} \ \, I_{2 \ (s)} + \ \ \underline{\hspace{0.3cm}} \ \, OC\Gamma_{(aq)} + \underline{\hspace{0.3cm}} \ \ \, H_{2}O_{(1)} \rightarrow \ \ \underline{\hspace{0.3cm}} \ \, IO_{3}^{-}{}_{(aq)} + \underline{\hspace{0.3cm}} \ \ \, C\Gamma_{(aq)} + \underline{\hspace{0.3cm}} \ \ \, H^{+}{}_{(aq)}$$

$$3. \ _As_2O_{3 \ (s)} + _NO_{3 \ (aq)} + _H_{2}O_{\ (l)} + _H_{(aq)} \rightarrow _H_{3}AsO_{4 \ (aq)} + _N_{2}O_{3 \ (aq)}$$

$$4. \ \ \underline{\ \ } MnO_4^-{}_{(aq)} + \underline{\ \ \ } Br^-{}_{(aq)} + \underline{\ \ \ } H_2O_{(1)} \rightarrow \underline{\ \ \ } MnO_{2~(s)} + \underline{\ \ \ } BrO_3^-{}_{(aq)} + \underline{\ \ \ } OH^-{}_{(aq)}$$