

LAD H3 (pg 1 of 1) Single Replacement Reactions

Name _____ Per ___

1. In the SMALL flask Aluminum chloride is put into water and then combined with solid copper metal. [if a Rx occurs, assume copper(II)] Observations?
2. In the LARGE flask, Copper(II) chloride is put into water and is then combined with solid aluminum. Observations?
3. Is this reaction exothermic or endothermic? How do you know?
4. In the space below, write the overall and net-ionic equations for the reaction(s) that occur above.
 - a. Which element is oxidized, and which element is reduced? How do you know?
 - b. Apply oxidation numbers to all elements to confirm question (a), and what are the total number of electrons transferred?
5. When metals are unreacted, they are atoms, when metals are reacted, they become cations.
 - a. In these SR reactions, the metal that is more reactive is the metal that will exist as an ion, rather than as an atom. Which element must be more reactive: copper or aluminum? How do we know from our combinations in #1 & 2?
 - b. Check the activity series and confirm your conclusion. Which element is listed as more reactive, copper or aluminum? How do you know?
6. Let's consider the color changes.
 - a. Which ion Cu^{2+} or Cl^- is causing the starting solution to be blue? How do you know? (hint: AlCl_3 color?)
 - b. What color is the solid product that forms in #2 ? What element is the solid product?
 - c. Why does the blue color of the solution fade as the reaction proceeds? Where does the blue color go?