I. Objectives:
How do ionic bonds form?
   a. Student will be able to use the ideas of Oxidation reduction to justify how an ionic bond is formed.
   b. Student will be able to determine if a substance is using Ionic bonding.
   c. Students will be able to write ionic formulas and names for specific ionic compounds.
   d. Students should be able to draw a representation of an ionic crystal and relate that drawing to the chemical formula of that substance.

II. What are the properties of ionic compounds?
   a. A student should be able to determine how ionic charge and ionic radii affects the Melting point of an ionic compound. (Coulomb’s law)
   b. Student should be able to indicate, why or why not, an ionic compound dissolves in a solvent.
   c. Student will be able to write out reactions showing how individual ionic compounds dissociate when dissolving.

1. AlCl₃ is an ionic solid.
   a. This ionic solid can be produced by the production of oxidation of aluminum and the reduction of chlorine. Write a chemical equation representing this transition.
   b. Split the reaction into two half reactions.
   c. Indicate if each half reaction is exothermic or endothermic.
   d. Draw a representational particle view of solid AlCl₃ in the box.

2. NaCl and AlCl₃ are placed in a clay pot (SiO₂) A student heats the two substances in the pot, checks the heating at 1000°C and finds the NaCl has melted and checks at 2000°C finding both salts have melted.
   a. What about the AlCl₃ allows it to melt at a higher temperature.
      \[ \text{Larger Coulombic Attraction \to Larger charges} \]
   b. Create an ionic salt that would melt at a higher temperature then AlCl₃
      \[ \text{Al}_2\text{O}_3 \]
   c. Create an ionic salt that would melt at a temperature between the chloride salts.
      \[ \text{Al}_2\text{S}_3 \]
   d. Write the chemical reaction for the melting of AlCl₃
      \[ \text{Ionic Bonding \to AlCl₃ \to Al}^{3+} + \text{Cl}^{-} \]
   e. Student checks again at 3000°C. All salts are melted yet the container is still holding up. Why?
      \[ \text{Strong Bond? Network Covalent} \]
   f. AlCl₃ has a very high melting point but dissolved in water very nicely. In the box provided draw a particle view of this salt dissolved. Show the salt and water in your drawing.