Answers to Homework: Unit 1, Lesson 13: Classifying Solids

1. Read pages 196 to 199, and page 204
2. Answer questions 3 and 5 on page 208

Page 208, question 3:

a) $P_4$: is a molecular non-polar (pure) covalent molecule. Only London dispersion forces can act between its molecules.
b) $Na_3PO_4$ is an ionic solid. It will form a crystal lattice.
c) Os is a metal, so it will have metallic bonding between its atoms.
d) SiO$_2$ is a network solid. It has bonds between all molecules in three dimensions.

Page 208, question 5:

A solid is soluble in water and has a melting point of 140ºC. In order to classify this solid as ionic, molecular (polar or non-polar), metallic or network, what additional tests should be carried out?

- from its solubility in water and low melting point, it is probably a polar covalent compound
- check to see if the solution conducts electricity. If it does, it is probably ionic. If it does not, it is probably polar covalent.

3. Complete the chart “Summary: Characteristics of Crystalline Solids” to compare the properties of the different types of crystalline solids (solids that have a regular crystal structure)
   - answers will be posted in class