Recitation Activity:
Covalent Bonds and LDFs

1. What would you predict for the type of bonding and/or intermolecular forces (IMF) in the chart below for each element?

Elemental form	**H_2**	**He**	**Li(s)**	**Be(s)**	**B(s)**	**C(s)**	**N_2**	**O_2**	**F_2**	**Ne**
Melting point	13.81 K	0.95 K	453.65 K	1560 K	2348 K	3823 K	63.15 K	54.36 K	53.53 K	24.56 K
Boiling point	20.28 K	4.22 K	1615 K	2744 K	4273 K	4098 K	77.36 K	90.20 K	85.03 K	27.07 K
Name	hydrogen	helium	lithium	beryllium	boron	carbon	nitrogen	oxygen	fluorine	neon
What type of bonds or bonding is present?										
Does a mole of this elemental form exist as small molecules or an extended network?										
Does a mole of this elemental form have LDFs?										

2. What pattern do you see regarding the melting and boiling points of these elements relative to the types of bonding and interactions in them?

3. Using the evidence provided in the table, explain the pattern that you identified in question 2.

4. Why is nitrogen a gas at room temperature and carbon is a solid?

5a. Diamond and graphite have very different properties but are made of the same atoms. Indicate the properties of each.

Diamond	Graphite

b. Describe the model(s) of bonding present in each substance

c. Use the bonding models to explain why diamond and graphite have different properties with respect to conducting electricity.

d. Use the bonding models to explain why diamond is hard and graphite is soft.