Atomic interactions questions: Name Date

1. **Predict and justify**: Are the London Dispersion forces between Xe atoms are larger or smaller than those of He?

2. **Draw and explain**: Draw a graph showing how the potential energy of a two He atom system changes as the atoms approach each other. **Use a solid line for the interactions between the He** atoms.

   Now, using the same graph, **and using a dotted line,** show how the potential energy changes when two Xe atoms approach each other. Explain how and why the two curves differ from each other.

3. **Predict and justify**: Which has the higher melting and boiling points (Xe or Ne) – explain why.

4. **Draw and explain**: Draw a picture of three helium atoms: indicate the forces holding them?

5. **Draw and explain**: A container of solid He is heated, the He will first melt and then evaporate. Illustrate how energy is transferred to the He atoms and describe why the He solid melts? .

6. **Explain**: Why do you think it takes a temperature of ~6000K to break the interaction between two hydrogen atoms, but only 4K to break the interaction between two helium atoms?