

Worksheet 3.3
Covalent Bonding and London Dispersion Forces

1. Use the following chart of boiling point temperatures to answer the following questions:

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

a. List the elemental forms that have the lower boiling points?

What type of bonding and/or interactions might be present for each of the elemental forms you listed for lower boiling points?

b. List the elemental forms that have the higher boiling points?

What type of bonding and/or interactions might be present for each of the elemental forms you listed for higher boiling points?

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

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

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