Worksheet 3.6
Types of Bonding

1. What types of bonding have we discussed so far? Briefly describe how each type of bonding results in very different properties. Use an example to help you explain.

The next few questions will ask you to explain the following properties for these three different elements: Na(s), Si(s), and Br_2(l).

Sodium: Na, mp 370 K, grey, shiny, malleable and ductile and conducts electricity.
Silicon: Si, mp 1687 K, grey, shiny, hard and brittle, can be chipped.
Bromine: Br_2, mp 266 K, brown liquid, easily vaporized (bp 332 K). At temperatures above 1000K, Br_2 dissociates.

For each element **draw** and **label** an atomic/molecular level depiction that explains the observed properties below. Then use the drawing to explain how the type of bonding in the element leads to its observed properties.

2. Sodium: Na, mp 370 K, grey, shiny, malleable and ductile and conducts electricity.

3. Silicon: Si, mp 1687 K, grey, shiny, hard and brittle, can be chipped, does not conduct electricity at low temperatures.

4. Bromine: Br_2, mp 266 K, brown liquid, easily vaporized (bp 332 K). At temperatures above 1000K, Br_2 dissociates.