Section A

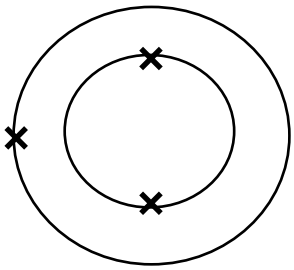
1. Choose the correct words from the box to complete the sentence.

You can use each work once, more than once or not at all.

elements	metals	non-metals	ions

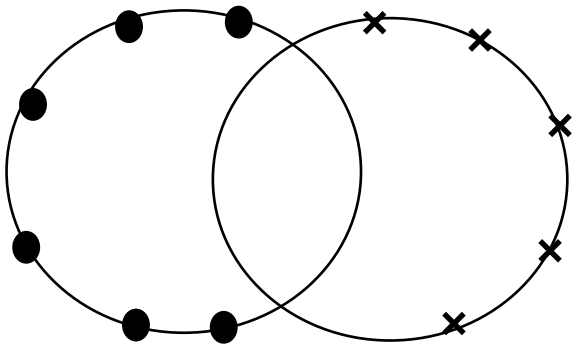
Covalent bonding occurs between _____ and _____.

2. Complete the electronic configuration diagram below to show 6 electrons on the outer shell.



3. Redraw the electronic configuration from question 2 above, but this time
   - Only draw the valance shell electrons
   - Draw the atom with a full outer shell

4. Complete the dot and cross diagram to show the bonding in a molecule of Chlorine gas, Cl_2.



Section B

5. Draw a dot-and-cross diagram to show the bonding in a molecule of water, H_2O.

6. Draw a dot-and-cross diagram to show the bonding in a molecule of methane, CH_4.

7. Draw a dot-and-cross diagram to show the bonding in a molecule of ammonia, NH_3.

Section C

8. Hydrochloric acid has the chemical formula HCl.

a. Identify the type of bonding present in HCl.
b. Draw a dot-and-cross diagram to show the bonding in HCl.
c. Calculate the relative formula mass of hydrochloric acid.
d. Calculate the percentage by mass of chlorine in HCl.
e. Write a word equation to show what happens in the reaction between hydrochloric acid and sodium hydroxide.
f. Write a balanced chemical equation for the reaction in Q5.
g. Identify the type of bonding that would be present in each of the products of the reaction in Q5.