

1. Complete the following sentences:

Ionic bonding occurs between a metal and a _____. The metal _____ electrons to form a _____ ion, so that it has a _____ outer shell of electrons. The non-metal _____ electrons to form a _____ ion, so that it has a full outer shell of electrons.

2. What is an ionic bond? Describe what happens to electrons during the formation of an ionic bond.

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a. Draw diagrams to show how you would expect the following elements to form ionic bonds:

Deduce the formula of each of the following ions : Ca ions, Oxygen ions
Na ions, F ions.....

b. Calcium + Oxygen:

c. Sodium + Fluorine:

d. Table salt has chemical formula NaCl. What type of forces of attraction hold the structure of solid chloride together?

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4. The diagrams below show the electron arrangement in two compounds.



(a) In a water molecule, each hydrogen atom is bonded to the oxygen atom by sharing a pair of electrons.
Why does an oxygen atom share two pairs of electrons rather than just one pair?

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(b) Describe how a potassium atom becomes a potassium ion.

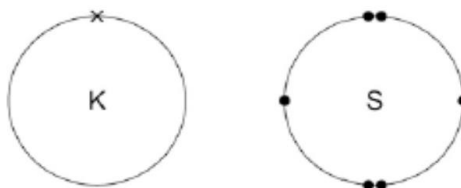
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(c) Why is there a bond between the ions in potassium chloride?

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5. **Figure 1** shows the outer electrons in an atom of the Group 1 element potassium and in an atom of the Group 6 element sulfur.

Figure 1



(a) Potassium forms an ionic compound with sulfur.

Describe what happens when **two** atoms of potassium react with **one** atom of sulfur.

Give your answer in terms of electron transfer.

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