C1 1.4 – Forming Bonds

Yr 9

Wednesday 16th May 2012

Title: Forming Bonds

Objective: explain covalent and ionic bonding

I must be able to identify different kinds of bonds from dot and cross diagrams

I should be able to predict which kind of bonds metals and non-metals will make when they react together

I should be able to draw dot and cross diagrams myself to show the bonds

Reacting sodium and chlorine

- In your books – draw the atomic structure (the atom with the electron shells) of both sodium and chlorine (use your periodic tables for this).

- We will do an experiment to react them together. What do you notice straight away.
  - They react very quickly

  - http://www.teachertube.com/viewVideo.php?video_id=67110&title=sodium_plus_chlorine

They react quickly because...

- Sodium has only 1 electron in its outer shell
- Chlorine has 7 electrons in its outer shell
- They both “want” to have a full outer shell as quickly as possible so sodium will transfer its electron to chlorine. That way, both now have a full outer shell and are bonded together.
- This is called IONIC BONDING

We can represent this with symbols

Na + Cl NaCl

COVALENT BONDING

Instead of transferring electrons from one atom to the other, some atoms share electrons so that their outer shells become full.

Watch the video about covalent bonds

http://www.bbc.co.uk/schools/gcsebitesize/science/add_aqa_pre_2011/atomic/covalentbond.shtml

1. Write down 3 facts from the video

2. Are covalent bonds weak or strong?

Carry out your work sheets

- Homework
  - Is on the back of your worksheets

Plenary

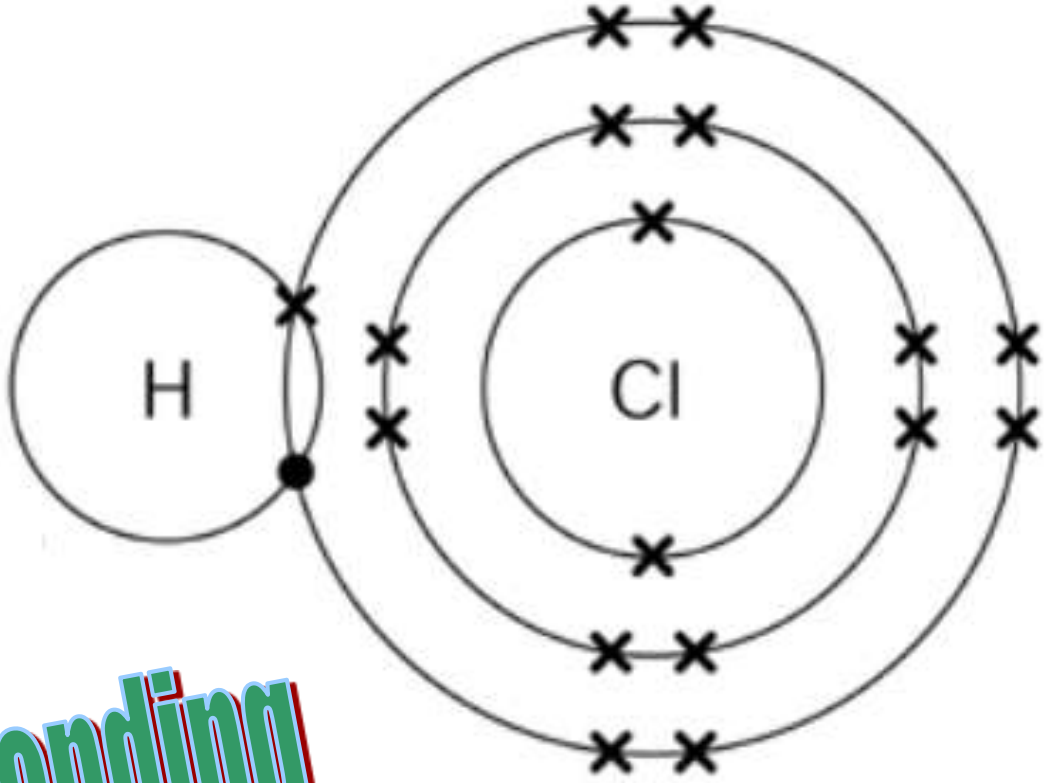
For each of the following – write on your mini whiteboard – I if it is an Ionic or C if it is a covalent bond.

Ionic bonding or Covalent Bonding

You decide why!

there is more than one explanation!

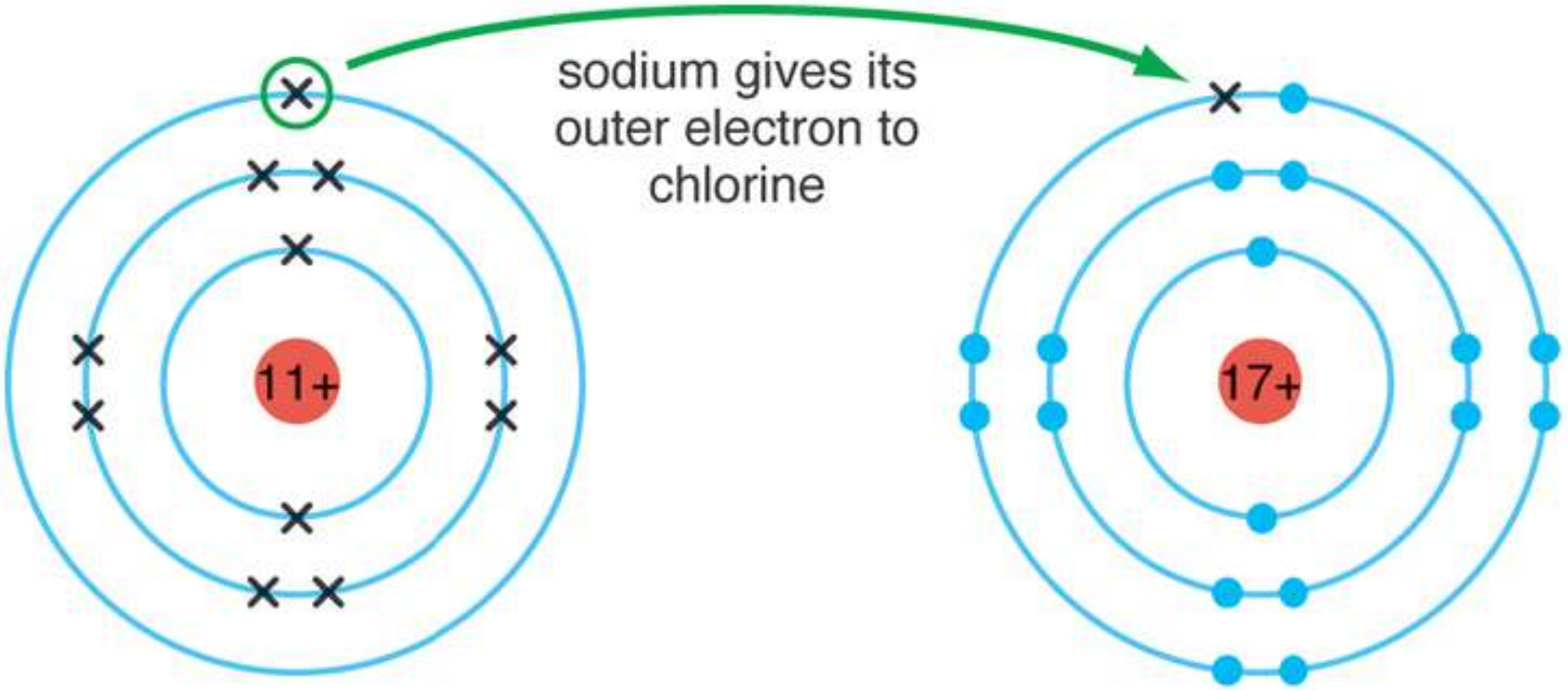
Hydrogen chloride (HCl)



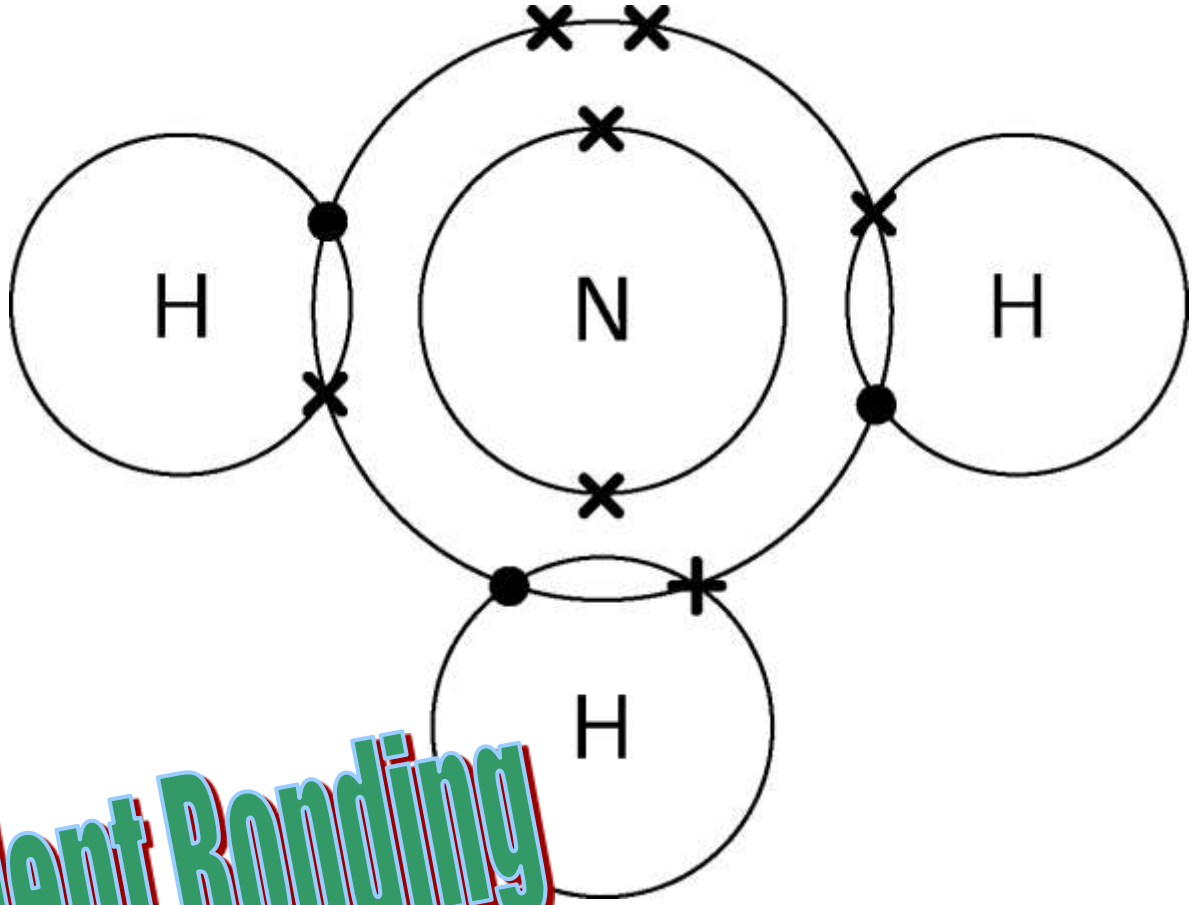
Covalent Bonding

Ionic bonding

Sodium Chloride (NaCl)

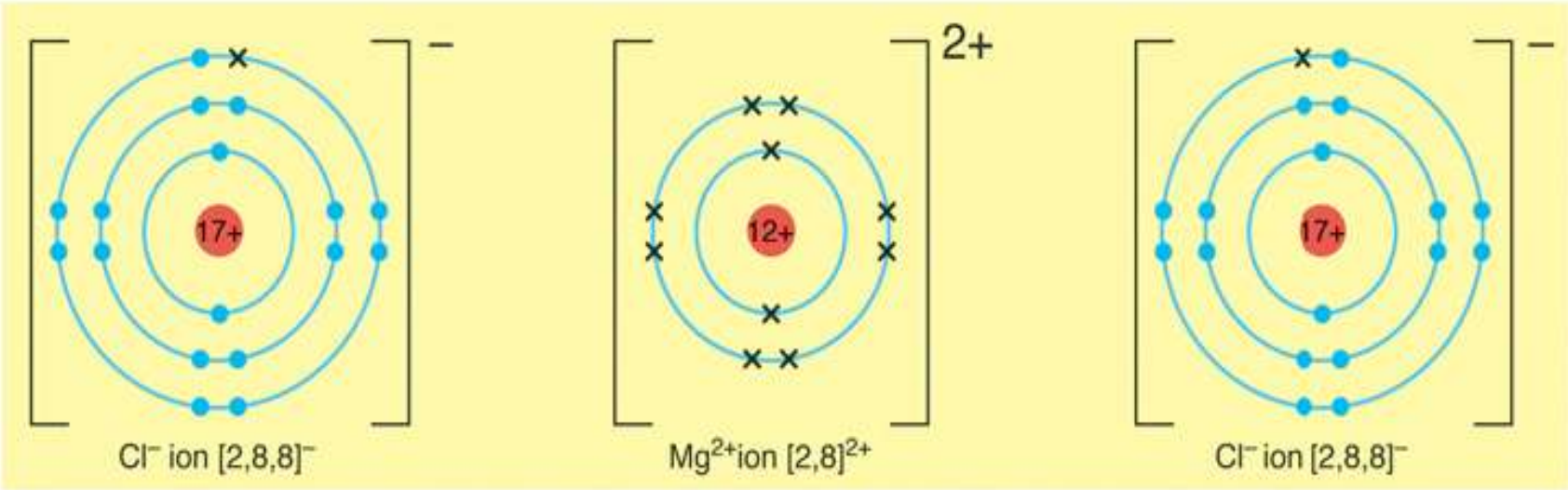


Ammonia (NH3)



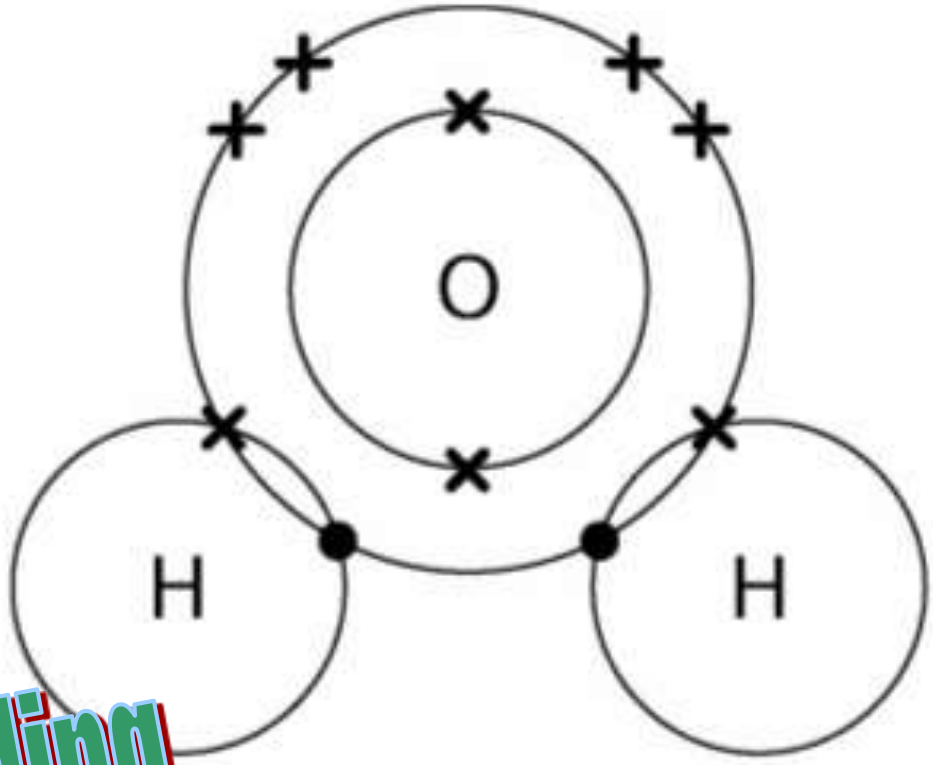
Covalent Bonding

Magnesium Chloride ($MgCl_2$)



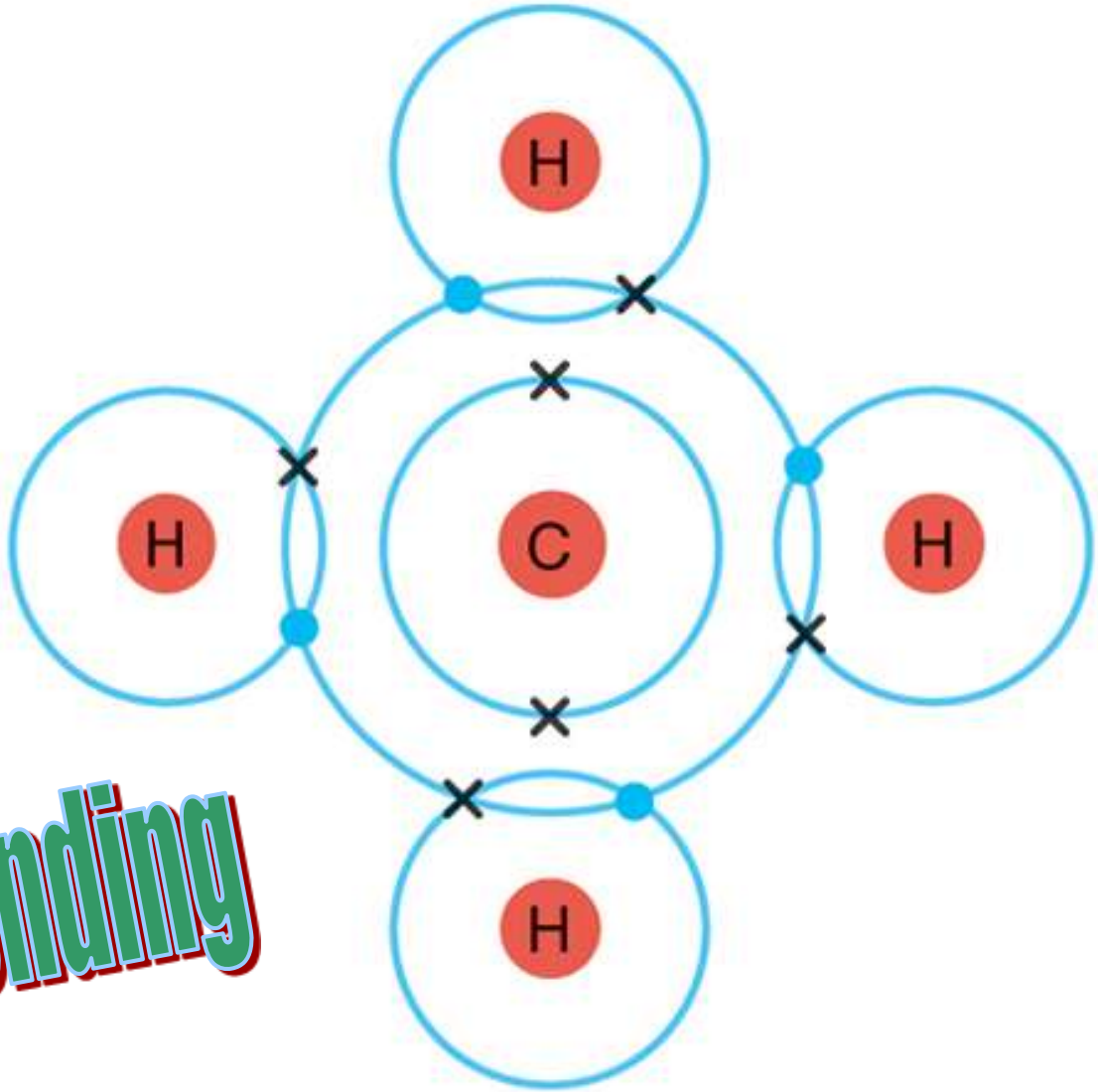
Ionic bonding

Water (H_2O)



Covalent Bonding

Methane (CH_4)



Covalent Bonding