Name: _____
Date: _____

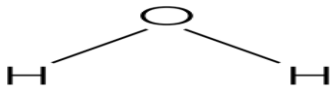
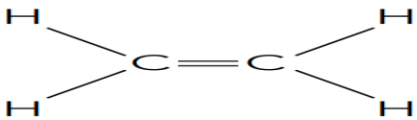
KEY WORDS

covalent bonding: chemical bonding formed by the sharing of one or more pairs of electrons between two atoms

displayed formula: a representation of the structure of a compound which shows all the atoms and bonds in the molecule

1. Draw dot-and-cross and displayed formulae for the following.

Molecule	Dot-and-cross diagram	Displayed formula
Nitrogen (N_2)		
Ethene (C_2H_4)		
Methanol (CH_3OH)		

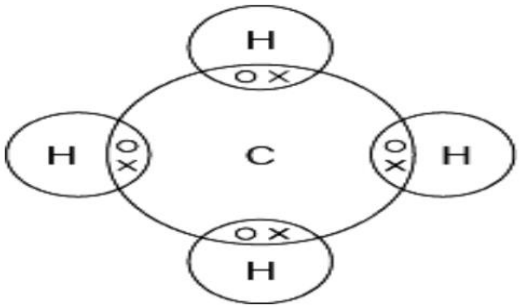
Name of compound	Formula	Displayed formula
Hydrogen chloride	.....	
Water	H_2O	
Ammonia	.....	
.....	CH_4	
Ethene	.....	
.....	.....	

2. A different carbon atom has 6 protons and 8 neutrons.

Draw a ring around the symbol that represents this atom.

$^{8}_{6}C$ $^{14}_{6}C$ $^{14}_{8}C$

The diagram shows the bonding in a methane molecule.



(i) Draw a ring around the chemical formula of a methane molecule.

CH_4 **CH^4** **C_4H**

(ii) Draw a ring around the word that describes methane.

compound **element** **mixture**

(iii) Draw a ring around the type of bonding in a methane molecule.

covalent **ionic** **metallic**

3. Nitrogen fluoride is a covalent compound.

(i) Draw a diagram showing the arrangement of the valency electrons in one molecule of the covalent compound nitrogen trifluoride, NF_3.

Use x for an electron from a nitrogen atom.
Use o for an electron from a fluorine atom.

4.

Complete the dot-and-cross diagram in Fig. 3.1 of a molecule of ammonia.

Show outer shell electrons only.

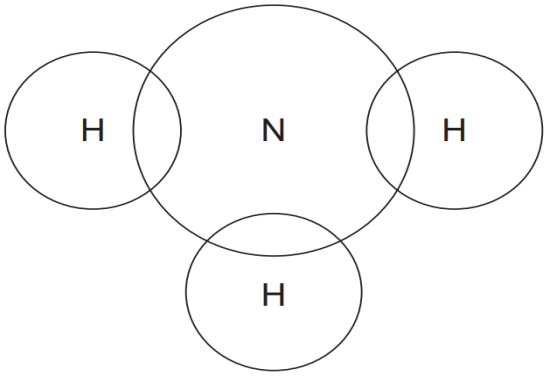
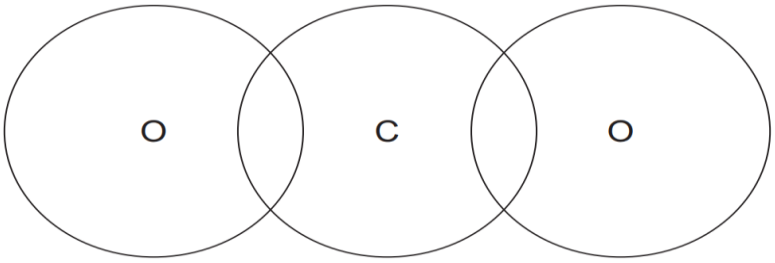


Fig. 3.1

5.

Complete the dot-and-cross diagram in Fig. 1.1 for a molecule of CO_2.

Show outer shell electrons only.



6.

Bromine is a diatomic molecule.

State the meaning of the term *diatomic*.

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b. Write the molecular formulae of diatomic molecules.

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