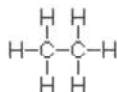
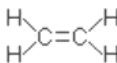


**ORGANIC
COMPOUNDS**
Elementary Selection

Ethane



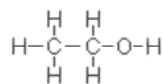
Ethene



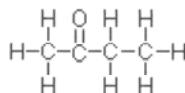
Ethyne



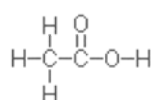
Ethanol



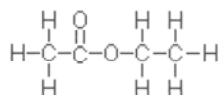
Butanone



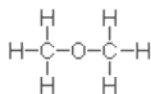
Ethanoic acid



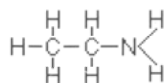
Ethyl ethanoate



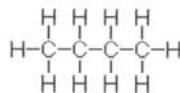
Methoxymethane



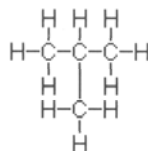
Aminoethane



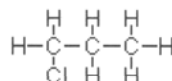
Butane



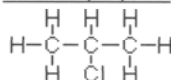
Methylpropane



1-chloropropane



2-chloropropane



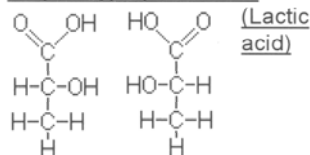
Cis 1,2-dichloroethene



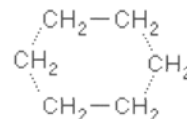
Trans 1,2-dichloroethene



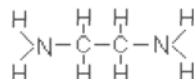
2-hydroxypropanoic acid



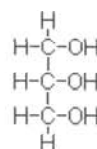
Cyclohexane



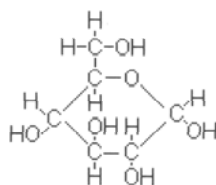
1,2-diaminoethane



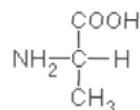
Propane-1,2,3-triol
(Glycerol)



D-(+)-Glucose

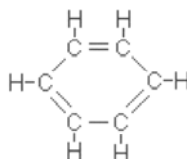


2-Aminopropanoic acid
(Alanine)

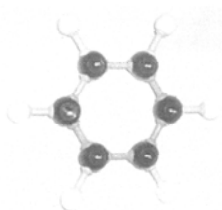


Benzene

(a) Kekule Structure
made by using alternate single and double bonds.



(b) Planar symmetrical ring
made using 5-hole atom parts 120 hole angles



MolecModels3D Molecular Model Teacher Set
For Inorganic and Organic Chemistry
Cat. No. 1021004 **Contents: 108 Atoms**

Qty.	Element	Colour	Holes	Angles & type	Dia mm
14	Carbon	black	4	109° tetrahedral	23
6	Carbon	Dk blue	5	90° & 120° Trig-bipy	23
12	Hydrogen	White	1		17
2	Hydrogen	White	2	180° linear	17
6	Nitrogen	Blue	4	109° tetrahedral	23
4	Nitrogen	Blue	3	107° pyramidal	23
16	Oxygen	Red	2	105° angular	23
6	Oxygen	Red	4	109° tetrahedral	23
8	Sulphur	Yellow	2	105° angular	23
4	Sulphur	Yellow	4	109° tetrahedral	23
1	Sulphur	yellow	6	90° octahedral	23
4	Phosphorus	purple	4	109° tetrahedral	23
1	Phosphorus	purple	5	90° & 120° tribipyr.	23
2	Phosphorus	purple	3	107° pyramidal	23
8	Halogen	green	1		17
4	Metal	grey	1		17
3	Metal	grey	2	105° angular	23
2	Metal	grey	3	120° trigonal planar	23
4	Metal	grey	4	109° tetrahedral	23
1	Metal	grey	6	90° octahedral	23
6	Unhybridised p-lobe				pink
6	Unhybridised p-lobe				purple
6	Lone pair of electrons lobe				beige
Qty.	LINKS			Total length	
38	medium	grey		31 mm	
36	long flex.	grey		46 mm	
12	medium	purple		31 mm	
1	Instruction	leaflet			
1	Box	grey		235x 170 x 58 mm	

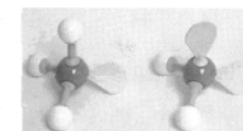
Medium grey links are used for single covalent bonds as in water H-O-H
Long grey links are flexible and are used for double (as in oxygen) or triple bonds.



Purple medium links are used for contrast in the following cases:

- dative or co-ionic bonds as in complex ions, e.g. tetraaquo-copper ion
 - hydrogen bonds as in ice
 - representation of ionic bonds in the empirical formulae of ionic compounds such as Na+...Cl-
- Note: Some compounds have both covalent and ionic bonds in the same molecule eg Na+...O-H

Pear shaped lobes can be used to represent lone pairs of electrons present in water & ammonia or the p-lobes responsible for pi bonding in ethene & benzene



INORGANIC

Notes

The atom-parts of the common standard elements are colour-coded as shown in the table on page 1. e.g. carbon is black. Some atom-parts are given a neutral colour so they can represent any element having the particular bond orientations.

ELEMENTS

Hydrogen	H—H
Chlorine	Cl—Cl
Oxygen	O=O
Nitrogen	N≡N

HYDRIDES

Sodium Hydride ionic
Na⁺ H⁻

Magnesium hydride ionic

H—Mg—H

Hydrogen chloride

H—Cl

Water
angular

Ammonia
pyramidal

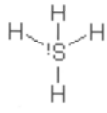
Methane
tetrahedral



Hydrogen sulphide
Use 2-hole sulphur



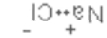
Phosphine angular



Silicon hydride

HALIDES

Sodium chloride
ionic



Calcium chloride
ionic



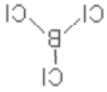
Beryllium chloride

6-hole metal linear axis



Boron trichloride

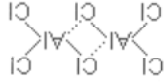
Use planar 3 hole atom



Aluminium chloride

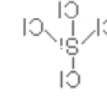
Use 4-hole metal

And 4-hole halogen



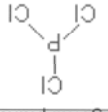
Silicon tetrachloride

Use 4-hole grey

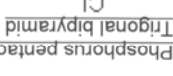


Phosphorus trichloride

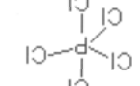
Trigonal planar use 5 hole



Phosphorus pentachloride

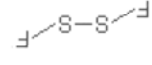


Trigonal bipyramid



D-sulphur difluoride

Use two 2-hole sulphur



Sulphur hexafluoride

Use 6-hole sulphur

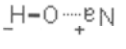


METAL OXIDES and HYDROXIDES

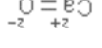
Sodium monoxide



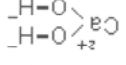
Sodium hydroxide



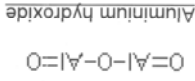
Calcium oxide



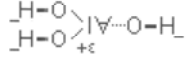
Calcium hydroxide



Aluminium oxide

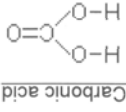


Aluminium hydroxide

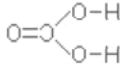


NON-METAL OXIDES and ACIDS

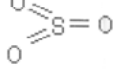
Carbon dioxide/linear



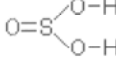
Carbonic acid



Sulphur dioxide

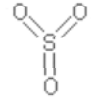


Sulphuric IV acid or Sulphurous acid



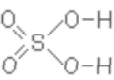
Sulphur trioxide

Use 6-hole



Sulphuric VI acid

Use 6-hole planar



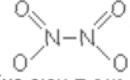
Dinitrogen tetroxide

Planar molecule

Use two 4-hole nitrogen

two 1-hole oxygen and

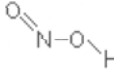
two 2-hole oxygen



Nitric III acid or Nitrous acid

Planar molecule

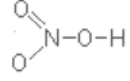
Use 4-hole nitrogen



Nitric V acid

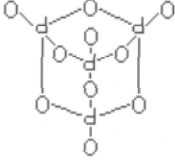
Nitrate group trigonal planar

Use 4-hole nitrogen



Tetraphosphorus decoxide

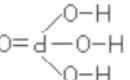
Use 4-hole phosphorus



Flat hexagonal network

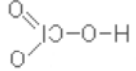
Phosphoric acid

Use 4-hole phosphorus



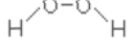
Chloric V acid

Use 4-hole chlorine



Hydrogen peroxide

non-planar molecule



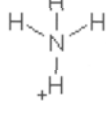
Hydroxonium ion

Use tetra oxygen



Ammonium ion

Use tetra nitrogen



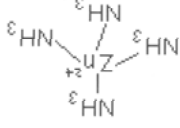
Complex Metal Ions

Tetrammino-zinc ion

Tetrahedral.

Use 4-hole nitrogen

Use 4-hole metal



Tetraquo-copper ion

Square planar

Use 6 hole metal

Use 4-hole oxygen for water

