

39.4: Procedures

You will build and sketch several models of molecules.

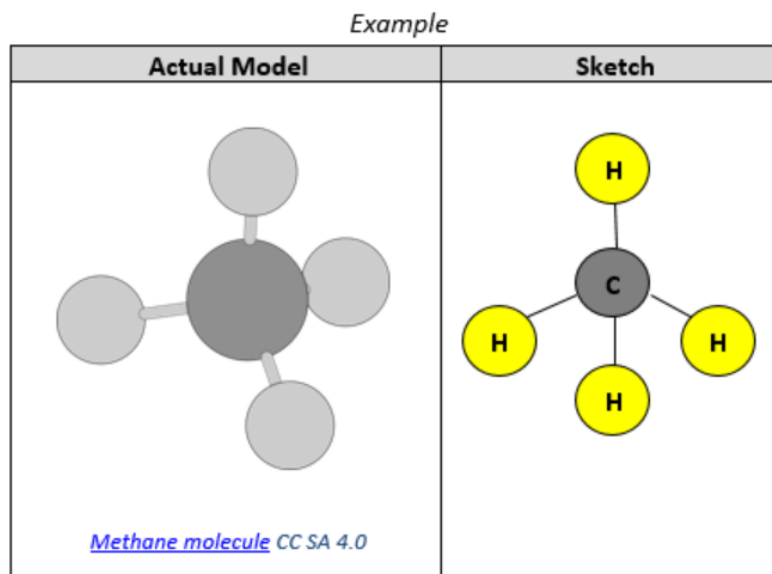


Figure 39.4.1: Sketch of a model of Methane molecule

Note

- Molecules that contain carbon may have more than one structure possible.
- Triangle and square structures are usually not valid.

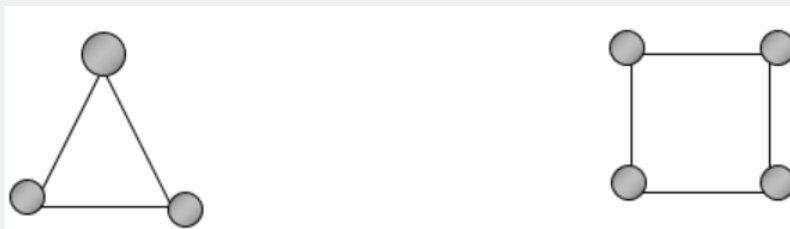


Figure 39.4.2: Triangle and square structures

1. Draw a table in which to record information about each molecule that contains only single bonds. **Do not fill in data until you have read the instructions for obtaining that data.**

Table 39.4.1: Single Bonds

--

	Molecule Name	Molecular Formula
a.	Hydrogen	H ₂
b.	Bromine	Br ₂
c.	Water	H ₂ O
d.	Hydrogen Chloride	HCl
e.	Hydrogen Bromide	HBr
f.	Hydrogen Peroxide	H ₂ O ₂
g.	Iodine Chloride	ICl
h.	Methane	CH ₄
i.	Dichloromethane	CH ₂ Cl ₂

- Build each molecule in the “Single Bonds” table. Sketch the molecule (remember to label it); attempt to show any three dimensional structure. You may use colored pencils, but you should also include the element symbols in your circles. Look at your model and determine whether it is symmetric (yes or no). Analyze the structure to determine whether the molecule would be polar (yes or no). Record your answers in your *single bonds* data table.
- Draw a table in which to record information for molecules containing double bonds. Repeat the same process for these molecules as you followed for the single bond molecules.

Table 39.4.2: Double Bonds

--	--	--

	Molecule Name	Molecular Formula	Symmetric (yes or no)
j.	Oxygen	O ₂	
k.	Ethylene	C ₂ H ₄	
l.	Nitroxyl	HNO	
m.	Nitrous Acid	HONO	
n.	Formaldehyde	H ₂ CO	
o.	Formic Acid	HCOOH	
p.	Chloroethene (vinyl)	C ₂ H ₃ Cl	
q.	Carbon Monoxide	CO	
r.	Carbon Dioxide	CO ₂	
s.	CycloPropene	C ₃ H ₄	

4. Draw a table in which to record information for molecules containing triple bonds, and repeat the process. Also draw a table in which to record information for some common molecules, and repeat the process.

Table 39.4.3: Triple Bond

	Molecule Name	Molecular Formula	Symmetric (yes or no)	Polar (yes or no)
t.	Nitrogen	N ₂		
u.	Acetylene	C ₂ H ₂		
v.	Cyanic Acid	HOCN		

Table 39.4.4: Common Substances

	Molecule Name	Molecular Formula	Symmetric (yes or no)	Polar (yes or no)
w.	Ozone	O ₃		
x.	Ammonia	NH ₃		
y.	Ethanol	C ₂ H ₆ O		
z.	Acetic acid	C ₂ H ₄ O ₂		
	Benzene	C ₆ H ₆		

Contributors and Attributions

- Template:ContribCCPhySc101L

39.4: Procedures is shared under a [CC BY](#) license and was authored, remixed, and/or curated by LibreTexts.