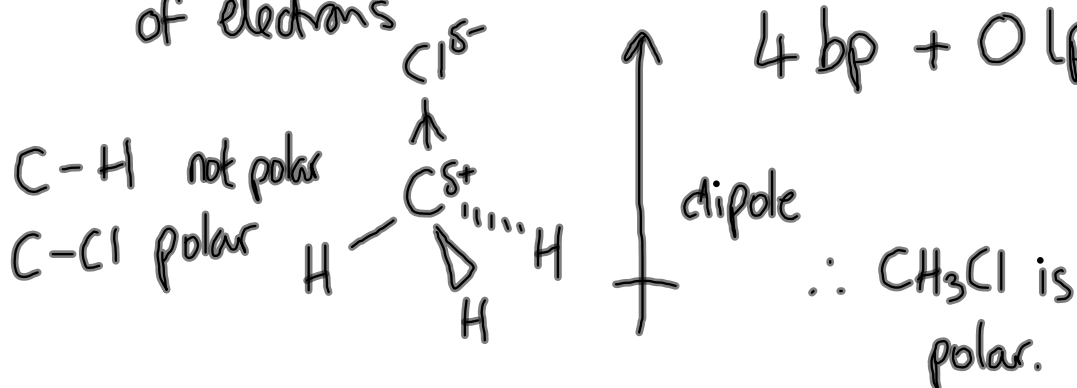


Analyse CH_3Cl for shape and polar bonds.
Hence determine if it is polar or not.

C is the central atom

Count e around C : 4 in outer shell
+ 4 for 4 bonds

\therefore tetrahedral arrangement of electrons 8e in 4 bonds
4 bp + 0 lp



Possible shape templates (VSEPR Theory)

3 pairs



trigonal planar

4 pairs



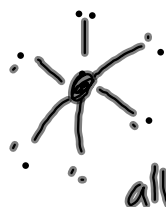
tetrahedral

5 pairs



trigonal bipyramid

6 pairs



octahedral

all 90°



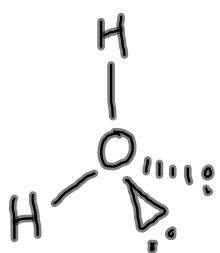
O is central atom

Count electrons : 6 in outer shell
 2 from bonds

 8

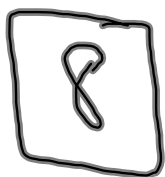
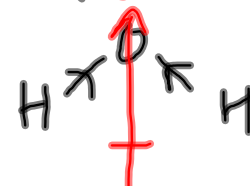
∴ use tetrahedral shape ① 2 bps leaves 4 in 2 lp

∴ 2bp 2lp ③



∴ bent molecule ①

O-H polar ①



H_2O is polar ②
 (polar bonds are NOT cancelled)

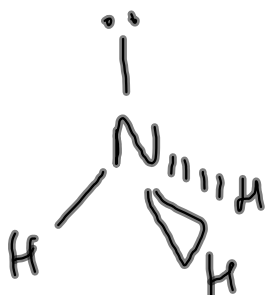


N is central atom

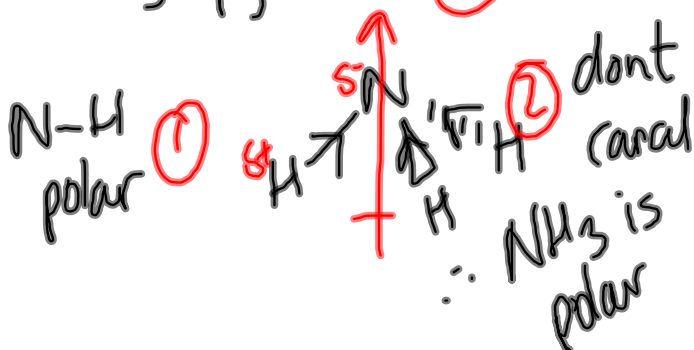
N has 5 electrons
3 bonds

∴ use tetrahedral model

| | | |
|---|--------|-----|
| 8 | 3 bp | (6) |
| ① | ③ 1 lp | (2) |



∴ NH_3 pyramidal ①

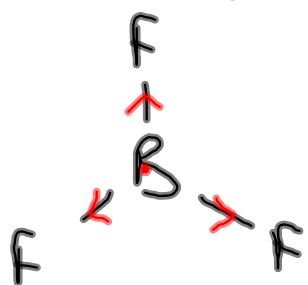




B central atom

B has 3 e

\therefore use trig planar BF_3 has 3 bonds
6e in 3 bp



BF_3 is trig planar
(no lone pairs)

B-F is polar
3 B-F poles
cancels
 \therefore not polar!

