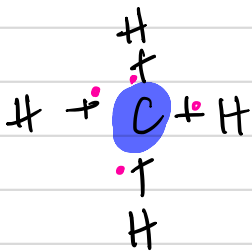


Predicting Hybridisation:

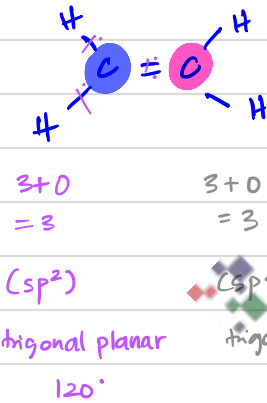
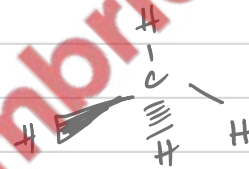
Steric # : # of sigma bonds + # of lone pairs around the central atom

	hybridisation		
4	sp^3	tetrahedral	109.5°
3	sp^2	trigonal planar	120°
2	sp	linear	180°



$$\begin{aligned} \sigma + \text{l.p} \\ 4 + 0 \\ = 4 \\ sp^3 \end{aligned}$$

tetrahedral, 109.5°



$$\begin{aligned} 3 + 0 \\ = 3 \end{aligned}$$

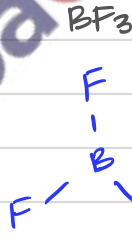
(sp^2)

trigonal planar
 120°

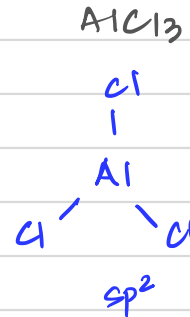
$$\begin{aligned} 3 + 0 \\ = 3 \end{aligned}$$

(sp^2)

trigonal planar
 120°



sp^2 (trigonal planar - 120°)



sp^2

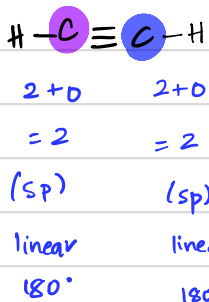


$$O = C = O$$

$$2 + 0 = 2$$

(sp)

linear
 180°



$$2 + 0$$

$$= 2$$

(sp)

linear

180°

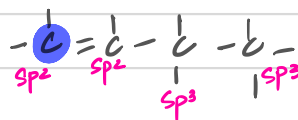
$$2 + 0$$

$$= 2$$

(sp)

linear

180°



sp^2

trigonal planar

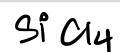
120°



sp^3

tetrahedral

109.5°



sp^3

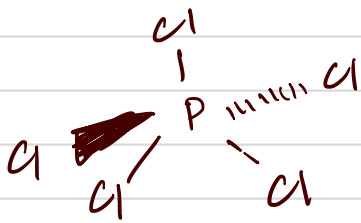
tetrahedral

109.5°



sp (linear)
 180°

Steric # 5 : eg PCl_5



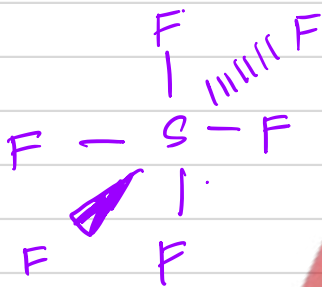
✓ trigonal bipyramidal

✓ $120^\circ, 90^\circ, 180^\circ$

$$5 + 0 = 5$$

Hybridisation : sp^3d X

Steric # 6 : SF_6



octahedral
 $90^\circ, 180^\circ$

$$0 + 6 = 6$$

Hybridisation : sp^3d^2 X

Steric #	hybridisation	shape	\angle	eg.
6	sp^3d^2	octahedral	$90^\circ, 180^\circ$	SF_6
5	sp^3d	trigonal bipyramidal	$120^\circ, 90^\circ, 180^\circ$	PCl_5
4	sp^3	tetrahedral	109.5°	$SiCl_4$ CH_4 CCl_4
3	sp^2	trigonal planar	120°	BF_3 ethene $AlCl_3$ BH_3
2	sp	Linear	180°	CO_2 ethyne $BeCl_2$ HCN

