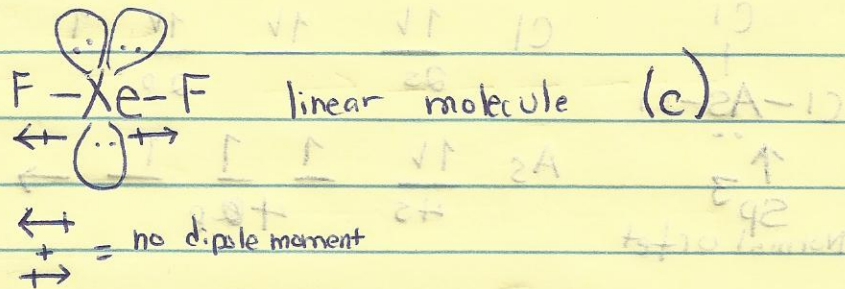


①

Unit 12 Problem Set

1) XeF_2 Valence $e^- = 8e^- \text{ for Xe} + 2(7e^- \text{ for F}) = 22e^-$



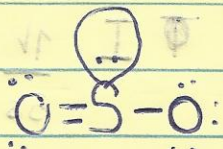
2) (a) SO_2 Valence $e^- = 6e^- + 2(6e^-) = 18e^-$
 Need $24e^-$ to satisfy octet for S + 2O.

24e⁻ Need

18e⁻ Valence

$6e^- \div 2e^- = 3 \text{ bonds}$

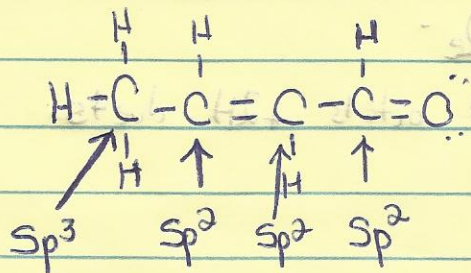
$18e^- - 6e^- = 12e^-$



bent structure

If you draw the other structures then you will see that they are linear.

3)



The C are the central atoms.

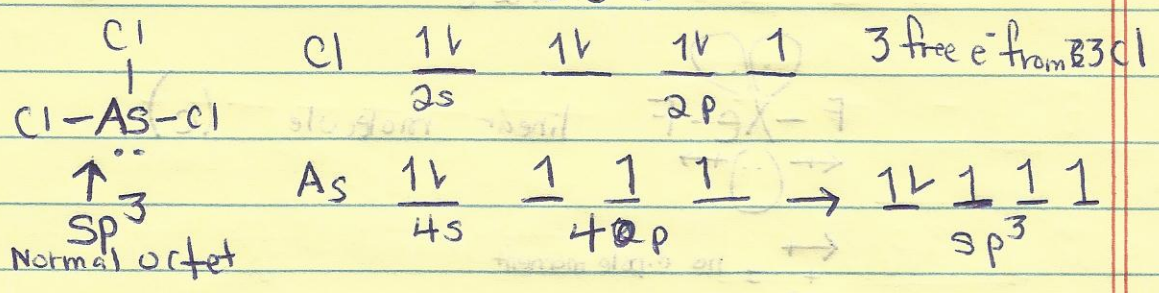
sp^2 orbitals have trigonal planar geometry

④

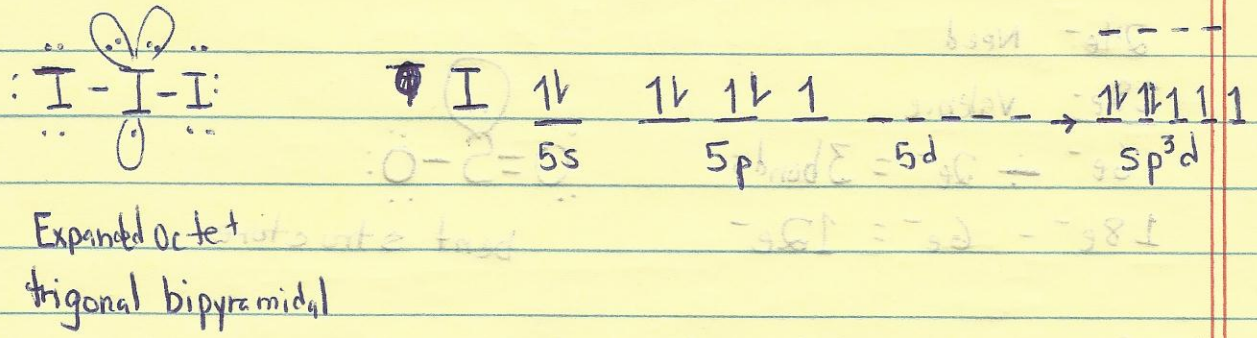
1

2

4) a. AsCl_3 Valence $e^- = 5$ for As + $3(7e^- \text{ for Cl})$
 $= 26e^-$

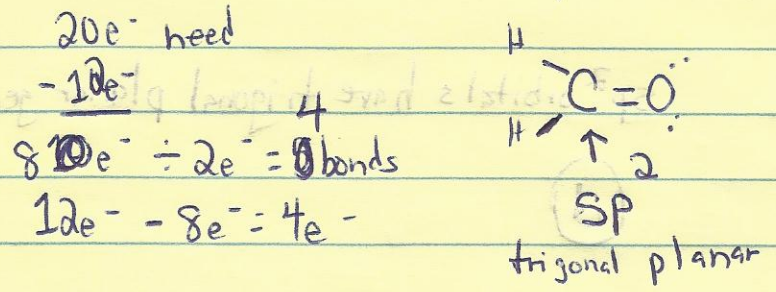


b. I_3^- Valence $e^- = (3 \times 7e^-) + 1e^-$
 $= 22e^-$



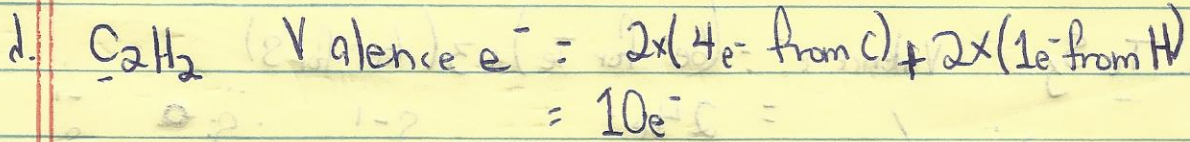
c. CH_2O Valence $e^- = (4e^- \text{ from C}) + 2(1e^- \text{ from H}) + (6e^- \text{ from O})$
 $= 10e^-$

Need $20e^-$ to satisfy C+O octets + 2H duets.



(4)

(3)

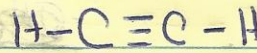


20 e^- need

10 e^- valence e^-

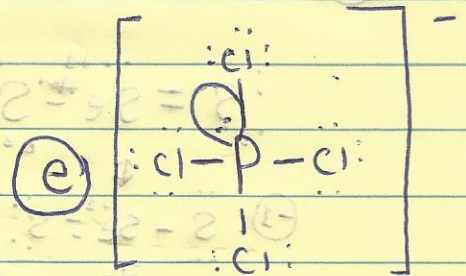
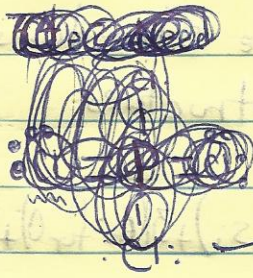
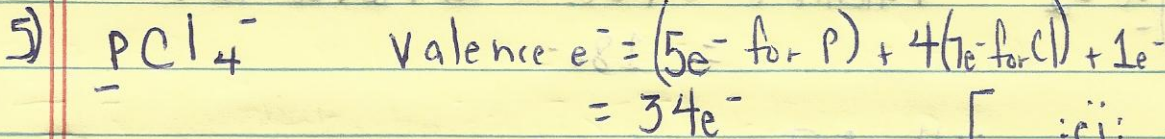
10 $e^- \div 2e^- = 5$ bonds

20 $e^- - 10e^- = 10e^-$



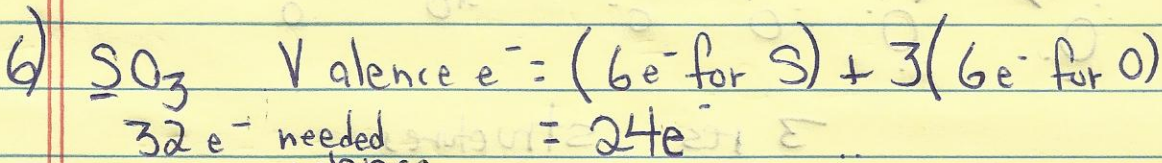
↑
sp

- linear



tetrahedral distortion

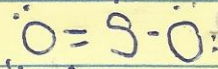
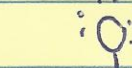
sorry!



-24 e^- valence

8 $e^- \div 2e^- = 4$ bonds

24 $e^- - 8e^- = 16e^-$



↑
will be distributed through

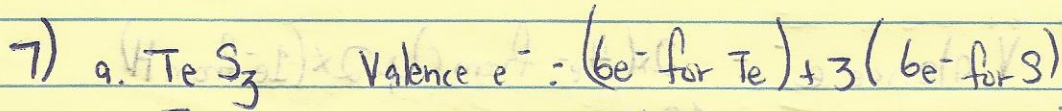
resonance.

2 single bond

1 double bond

} $\frac{4 \text{ e pairs}}{3 \text{ bonds}} = 1.33$

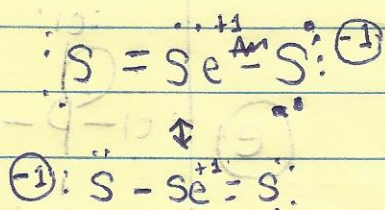
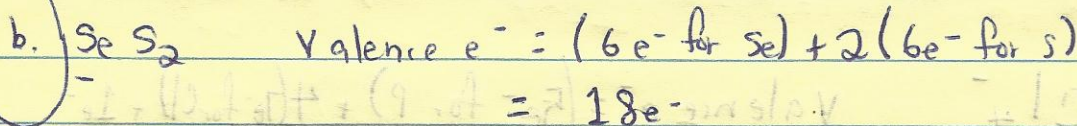
(c)



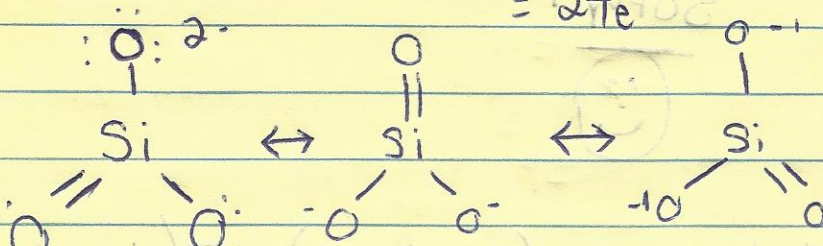
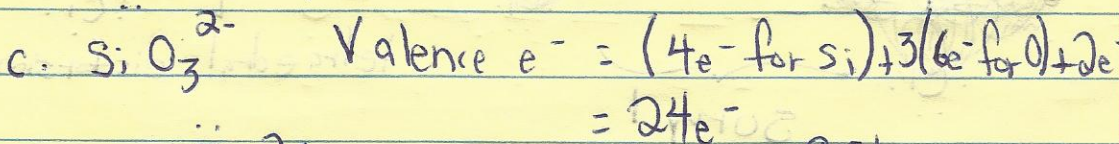
$= 24e^-$



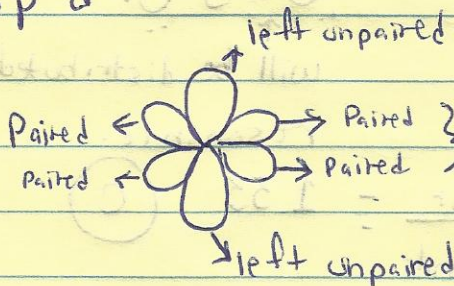
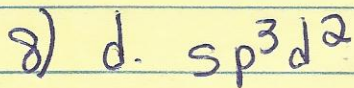
3 res structure



Fewest resonance structures
 2 res. structures



3 res structures



Then the structure would be planar

