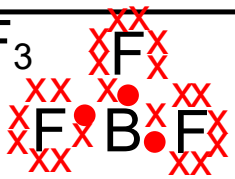
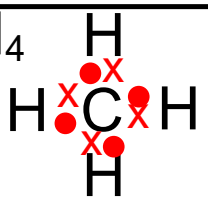
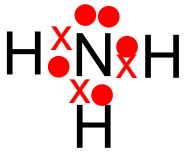
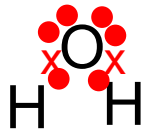
5 Molecular Shapes from Single Bonds

	Shape/ Bond Angles	Shared Bonded Pairs	Unshared Nonbonded Lone pairs	Central Atom
$BeCl_2$ 	linear 180^0	2	0	group 2
BF_3 	trigonal planar 120^0	3	0	group 3
CH_4 	tetrahedral 109.5^0	4	0	group 14
NH_3 	trigonal pyramid $< 109.5^0$	3	1	group 15
H_20  or 	V-shaped or bent/angular 109.5^0	2	2	group 16

For each of the following:

- draw electron dot diagrams
- draw structural diagrams
- name the shape
- name the bond angles

1. BeI_2
2. $GaCl_3$
3. CBr_4
4. PBr_3
5. SeF_2

1. BeI_2

dot diagram

structural diagram

I—Be—I

shape

linear

bond angle

180^0

2. $GaCl_3$

3. CBr_4

4. PBr_3

5. SeF_2

So, in general

	Bonding Pairs - Lone Pairs - Bonded Sides	
Trigonal Planar (120^0)	3 - 0 - 3	
	4 - 0 - 3	(1 double bond)
Linear (180^0)	2 - 0 - 2	
	4 - 0 - 2	(2 double bonds)
Tetrahedral (109.5^0)	4 - 0 - 4	
Trigonal Pyramid (107^0)	3 - 1 - 3	
Bent (104.5^0)	2 - 2 - 2	