

Predicting Molecular Geometry and Hybridization

1. In each case, predict (a) the *approximate bond angle(s)*, (b) the *hybridization* around the underlined atom. (Note: It is helpful to first sketch the Lewis structure!)

Molecule or Ion →	(1) <u>O</u> F ₂	(2) H ₂ <u>C</u> O	(3) <u>N</u> O ₂	(4) <u>B</u> F ₃	(5) SbF ₅
(a) No. of valence e ⁻ 's					
(b) Lewis structure					
(c) Approximate bond angle(s)					
(d) Hybridization					
(e) Polar or non-polar molecule?					
(f) Geometry name					

2. For each of the molecules below fill in the indicated items in the chart. The central atoms are underlined.

Molecule	(1) <u>S</u> O ₂	(2) H <u>B</u> F ₂	(3) <u>Xe</u> F ₄	(4) <u>C</u> H ₂ Cl ₂	(5) <u>N</u> F ₃
(a) No. of valence e ⁻ 's					
(b) Lewis structure					
(c) Approximate bond angle(s)					
(d) Hybridization					
(e) Polar or non-polar molecule?					
(f) Geometry name					

3. Predict (a) the *approximate bond angle*, (b) the *hybridization* around the indicated atoms (the atoms to which the arrows are drawn in the structures below). Write your answers near the corresponding labels (1 to 5) in the drawings. (Note: the lone pairs on the F atoms are omitted.)

