

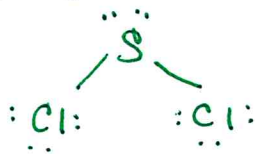
Name: KEY

Period: _____

Chemistry – 6.5 Chapter Review Problems
39 Points Possible

Pg. 193 #2: (6) Draw the Lewis structure, and use the VSEPR theory to name the geometry of the following molecules:

a) SCl_2



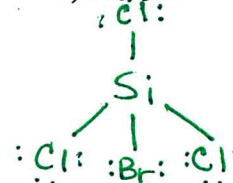
Bent

b) NH_2Cl



Trigonal pyramidal

c) SiCl_3Br



Tetrahedral

24. (8) According to the VSEPR theory, what molecular geometries are associated with the following types of molecules?

- | | | | |
|------------------|----------------------|----------------------------|--------------------|
| a. AB_2 | Linear | e. AB_6 | octahedral |
| b. AB_3 | Trigonal Planar | f. AB_3E | Trigonal pyramidal |
| c. AB_4 | Tetrahedral | g. AB_2E_2 | Bent |
| d. AB_5 | Trigonal bipyramidal | h. AB_2E | Bent |

25. (4) Describe the role of each of the following in predicting molecular geometries:

a. unshared electron pairs

Unshared electron pairs occupy space as bonded electrons do, but they are not part of the visualized molecular geometry.

b. double bonds

Double and triple bonds are treated the same as single bonds

27. (3) a. What are intermolecular forces?

Forces of attraction between molecules

b. In general, how do these forces compare in strength with those in ionic and metallic bonding?

Intermolecular forces are weaker than the forces involved in ionic and metallic bonding

c. Where are the strongest intermolecular forces found?
Between polar molecules

28. (2) What is the relationship between electronegativity and the polarity of a chemical bond?

The more electronegative atom in a covalent bond draws electrons toward it, creating a polar bond.

29. (4) a. What are dipole-dipole forces?

The forces of attraction between polar molecules

b. What determines the polarity of a molecule?

The overall polarity of a molecule is determined by the polarity of the individual bonds (in the molecule) and the orientation of the bonds with respect to one another (the geometry of the molecule)

30. (4) a. What is meant by an induced dipole?

An instantaneous dipole that is produced in a nonpolar molecule when the molecule's electrons are momentarily attracted by a polar molecule.

b. What is the everyday importance of induced dipoles?

Induced dipoles account for the solubility of nonpolar compounds, such as oxygen, in polar compounds, such as water

31. (4) a. What is hydrogen bonding?

A particularly strong dipole-dipole force that occurs among molecules containing H atoms bonded to highly electronegative atoms such as N, O, F, or Cl.

b. What accounts for its extraordinary strength?

Because of the great electronegativity difference between the atoms, hydrogen has a positive charge approaching that of a proton. This, coupled with the small size of the hydrogen atom, results in a very strong dipole-dipole attraction.

32. (2) What are London dispersion forces?

Intermolecular forces resulting from the creation of instantaneous dipoles.

50. (2) Arrange the following pairs from strongest to weakest attraction:

- a) polar molecule and polar molecule
- b) nonpolar molecule and nonpolar molecule
- c) polar molecule and ion
- d) ion and ion

D (ion-ion) > C (dipole – ion) > A (polar-polar) > B (nonpolar-nonpolar)