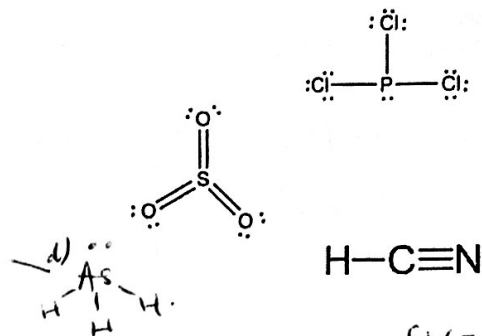


Date: _____

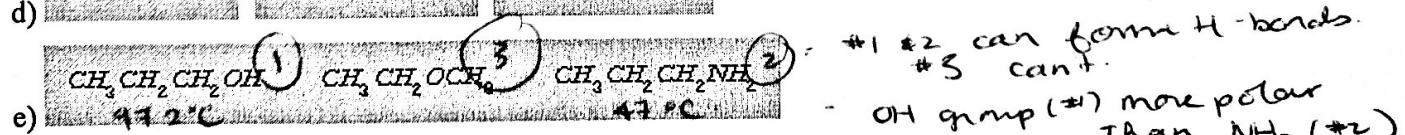
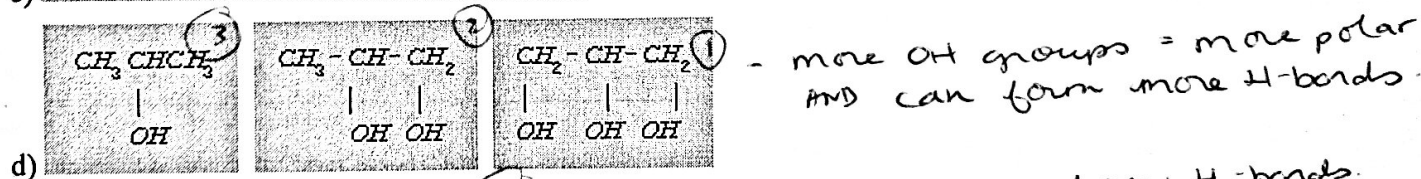
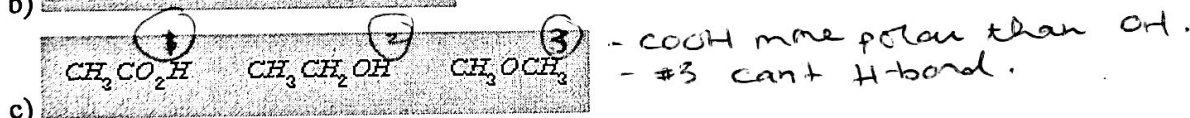
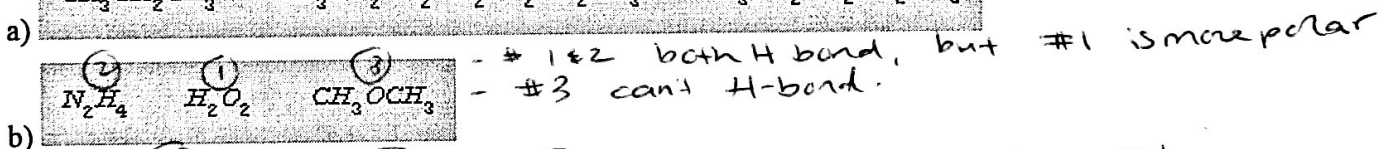
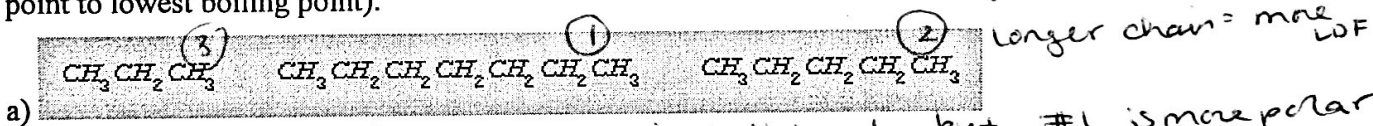
Molecular Polarity Worksheet

- Would we expect the molecule PCl_3 to be polar or nonpolar?
- Would you expect the molecule SO_3 to be polar or nonpolar?
- Would you expect the molecule HCN to be polar or nonpolar?
- Which of the following molecules would be expected to be polar?
 a) SF_6 b) SO_2 c) BrCl d) AsH_3 e) CF_2Cl_2



- How do we indicate a bond dipole when we draw the structure of a molecule? *- arrows or δ^+/δ^-*
- What condition must be met if a molecule having polar bonds is to be non-polar? *- equal (symmetrical) distrib of electrons.*
- How are the properties of melting point and boiling point related to a molecule's polarity? Explain. *The more polar the molecule, the higher the mp & bp.*
- Suppose that water molecules were found to be linear, that is, the H-O-H angle is 180° . Would you expect water to be a polar molecule? *NO - if linear, dipoles would cancel.*
- How would you account for the fact that ethane CH_3CH_3 is a gas (b.p. -88°C) whereas hydrazine N_2H_4 is a liquid (b.p. 113.5°C)? *ethane is non polar - only LDF. low bp. N_2H_4 is polar AND can H-bond. high bp.*
- Arrange the following molecules in order of probable increasing polarity (all linear)
 a) IBr b) HI c) I_2 *1 = low, 3 = high*

- Arrange the following sets of compounds in order of decreasing boiling points (highest boiling point to lowest boiling point).



- From the following, select those that contain polar covalent bonds, and, for these, indicate the location of the partial positive and negative charges:

- a) SO_2 b) H_2S c) N_2 d) CO_2 e) OF_2 f) HOCl
 g) O_3 h) NI_3 i) S_8 j) P_4 k) HCN l) HF
 m) HNO_3 n) S_2

** probably easiest to Google the Lewis structure*

