Name: _____ Period: _____ Assigned on Tuesday, February 10, 2026

6.1 Polarity and Intermolecular Forces **Due Wednesday, February 11, 2026**

1. Fill in the following table.

Substance	Formula	Lewis Dot Structure With Bond Dipoles Drawn In	Bond Polarity	Molecular Polarity	Type of Intermolecular Forces Between Molecules of the Substance
nitrogen trihydride					
carbon dioxide					
carbon tetrachloride					
sulfur difluoride					

2. List the three intermolecular forces in order of increasing strength. Under which conditions does each type exist?

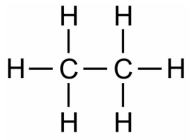
3. What intermolecular forces are present between the molecules or atoms of each of the following substances?

a. Br_2 b. HF c. O_2 d. HI e. Ar

4. Explain why the boiling point of H_2S (-60.3 ºC) is lower than that of water (0.0 ºC).

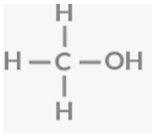
5. Two carbon compounds are shown below along with their boiling points. Explain the large difference in their boiling points.

bp = -89.0 °C



ETHANE

bp = 65.0 °C



Methanol

6. For each of the following liquids, list the types of intermolecular forces that you would expect within a sample of the substance.

   a. water b. bromine, Br_2 c. carbon tetrachloride

7. Which would be expected to be stronger for a given molecular substance, the intermolecular forces or the covalent bonds?

8. Explain the reasons for the difference in boiling points between

   a. HF (20°C) and HCl (-85°C)

   b. HCl (-85°C) and LiCl (1360°C)

   c. Cl_2 (-29°C) and I_2 (183°C)

9. The normal boiling point of CH_3Cl is –24.2°C, whereas that for CH_3I is 42.4°C. Which compound has the stronger intermolecular forces in the liquid phase?