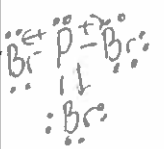
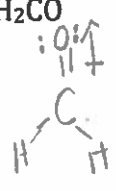

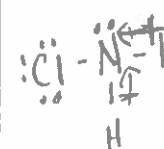
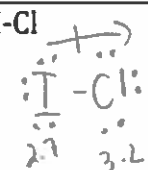
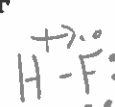
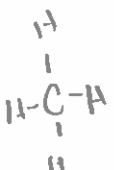
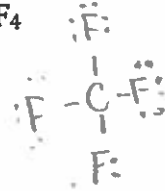
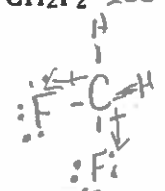


Chemistry 20: Intermolecular Forces Worksheet

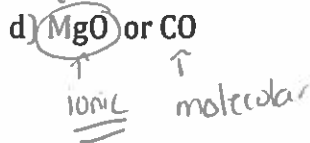
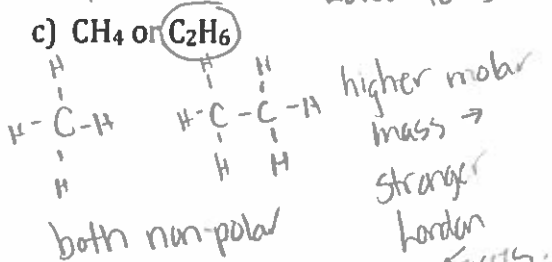
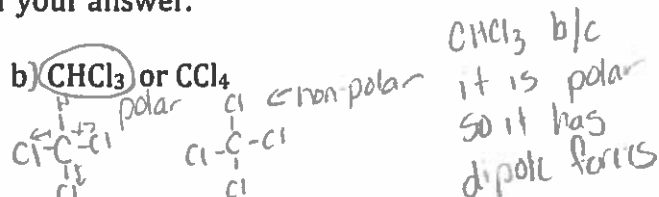
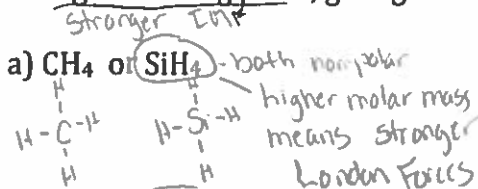
1. Each of the following statements describes an intermolecular force. For each statement indicate if it describes London Forces (L), dipole forces (D), or hydrogen bonding (H).

- L occurs in all molecules
H is the strongest intermolecular force
D occurs in polar molecules
L occur when a temporary dipole is formed
L strength of the force depends on how many protons and electrons are in the molecule
H occurs in molecules where hydrogen is covalently bonded to O, N, or F
L is affected by the shape of a molecule
D

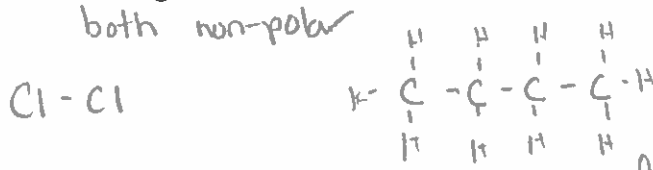
2. Identify the intermolecular forces present in each of the following molecules.

PBr_3 $26e^-$  dipole London	H_2CO  dipole London	I_2  London only.
NH_2Cl $14e^-$  dipole H-bond London	I-Cl  dipole London	HF  London Dipole H-bond
CH_4  London only	CF_4  London only	CH_2F_2 $20e^-$  London Dipole

3. For each of the following pairs of compounds, identify which one would have the higher boiling point, giving a reason for your answer.



4. Explain why the boiling point of Cl_2 is -35°C , and the boiling point of C_4H_{10} is -0.5°C even though both molecules contain the same number of electrons.



stronger London forces because of its shape.

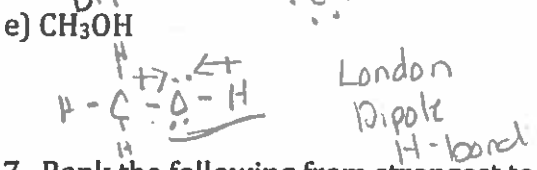
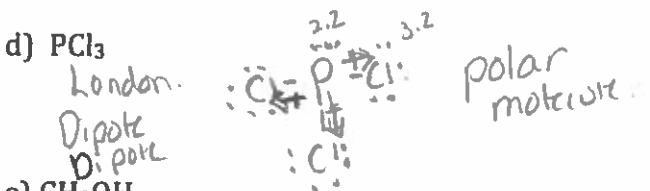
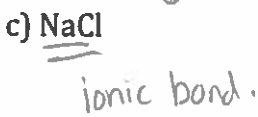
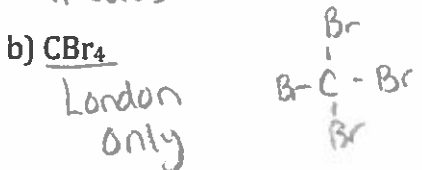
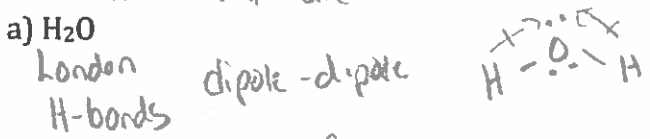
5. Kr and HBr have the same number of electrons. Explain why the boiling point of HBr is higher than the boiling point of Kr.



London + dipole.

6. Identify the forces that are broken when samples of the following melt: intermolecular
ionic bond

What IMF are in each.



7. Rank the following from strongest to weakest:

- 1) covalent bond
- 2) dipole-dipole force
- 3) hydrogen bond
- 4) ionic bond
- 5) london dispersion force

Weakest 5 2 3 1 4 Strongest