

## Intermolecular Forces Worksheet

Answers are on page 3 & 4. **Do the problems on your own BEFORE looking at the answers.**

1. Predict the molecular shape of each of the following:

- a. H<sub>2</sub>S \_\_\_\_\_
- b. CCl<sub>4</sub> \_\_\_\_\_
- c. SO<sub>2</sub> \_\_\_\_\_
- d. BrF \_\_\_\_\_
- d. PCl<sub>5</sub> \_\_\_\_\_

2. List **all** types of IMFs that would occur in each of the following (you should have a good enough understanding of electronegativities to answer all of these, except maybe SO<sub>2</sub>, without look up the electronegativity numbers).

- a. CH<sub>3</sub>CF<sub>3</sub> \_\_\_\_\_
- b. CCl<sub>4</sub> \_\_\_\_\_
- c. SO<sub>2</sub> \_\_\_\_\_
- d. BrF \_\_\_\_\_
- e. (CH<sub>3</sub>)<sub>3</sub>N \_\_\_\_\_
- f. PCl<sub>5</sub> \_\_\_\_\_

3. H<sub>2</sub>S, O<sub>2</sub> and CH<sub>3</sub>OH all have comparable molecular masses. List the **dominant** type of IMF for the pure substances, then rank the strength of each compound based on IMFs within the samples.

*(1 = strongest, 2 = in between, 3 = weakest).*

Substance	IMF	Relative Strength
HBr		
O <sub>2</sub>		
CH <sub>3</sub> OH		

4. Circle all of the species below that can form a hydrogen bond in its pure form. Explain why the other species couldn't hydrogen bond.



5. Rank the following compounds from weakest intermolecular forces to strongest. Justify your answers.



6. Rank the following from weakest intermolecular forces to strongest. Justify your answers.

