

1. How many lone pairs does chlorine have in  $\text{ClF}_3$ ?

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2. Rank the following compounds by relative boiling point.

$\text{H}_2\text{O}$   
 $\text{NH}_3$   
 $\text{AsH}_3$   
 $\text{PH}_3$

3. Rank the following compounds by relative sulfur-halogen bond length.

$\text{CH}_3\text{S-I}$   
 $\text{CH}_3\text{S-Br}$   
 $\text{CH}_3\text{S-Cl}$   
 $\text{CH}_3\text{S-F}$

4. Rank the following interactions by relative intermolecular strength.

$\text{Mg}^{2+}/\text{water}$   
 $\text{Li}^{1+}/\text{water}$   
 $\text{Na}^{+}/\text{water}$   
 $\text{K}^{+}/\text{water}$

5. Choose all compounds where the central atom has an expanded valence shell.

$\text{SF}_4$        $\text{PF}_3$        $\text{PH}_2^{1-}$        $\text{PF}_4^{1+}$        $\text{BrH}_3$        $\text{NO}_3^{1-}$        $\text{PO}_4^{3-}$   
 $\text{SO}_3^{2-}$        $\text{I}_3^{1-}$        $\text{N}_3^{1-}$