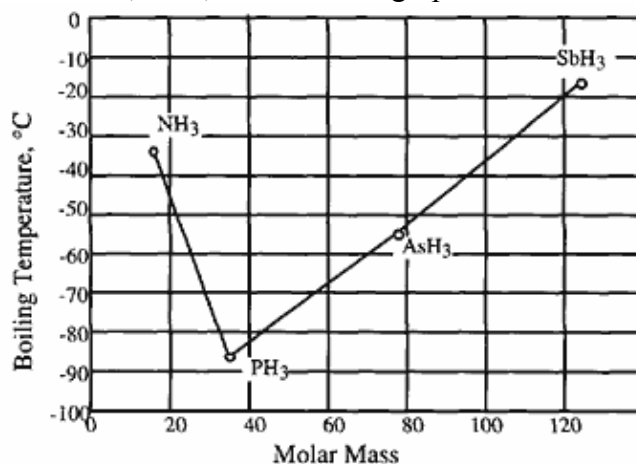


- The strongest forces of attraction occur between molecules of  
A) HCl B) HF C) HBr D) HI
- In ice, the molecules of  $\text{H}_2\text{O}(s)$  are held together by  
A) covalent bonds.  
B) hydrogen bonds.  
C) ionic bonds.  
D) Van der Waals forces.
- Why is the heat of vaporization of  $\text{H}_2\text{O}$  (2270 J) so much higher than that of  $\text{C}_8\text{H}_{18}$  (590 J)?  
A) octane molecules are polar.  
B) molecules of water are less massive.  
C) the forces of attraction are stronger between water molecules.  
D) the forces of attraction are stronger within octane molecules.
- The abnormally high boiling point of water is due primarily to the presence of  
A) hydrogen bonding.  
B) dipole–dipole attractions.  
C) Van der Waals attractions.  
D) molecule–ion attractions.
- Which substance has the strongest hydrogen bonding?  
A)  $\text{PH}_3$  B)  $\text{CH}_4$  C)  $\text{H}_2\text{O}$  D)  $\text{H}_2\text{Se}$

- Which type of bonding accounts for the boiling point of ammonia,  $\text{NH}_3$ , shown in the graph?



- Which type of bonding accounts for the boiling point of ammonia,  $\text{NH}_3$ , shown in the graph?  
A) Hydrogen bonding  
B) Covalent bonding  
C) Van der Waals forces  
D) London dispersion forces
- Dipole attractions are strongest between molecules of  
A)  $\text{Cl}_2$  B)  $\text{Cl}_4$  C) HF D) HCl
- In order of greatest to least bond strength, the correct ranking of bond strength is  
A) covalent, hydrogen, van der Waals  
B) van der Waals, covalent, hydrogen  
C) covalent, van der Waals, hydrogen  
D) hydrogen, covalent, van der Waals
- Which compound forms hydrogen bonds between adjoining molecules?  
A)  $\text{H}_2$  B)  $\text{CH}_4$  C)  $\text{NH}_3$  D)  $\text{SiCl}_4$
- The forces which hold together the atoms in liquid helium are  
A) ionic bonds  
B) covalent bonds  
C) Van der Waals forces  
D) hydrogen bonds
- Which molecular solid has only van der Waals forces as intermolecular forces?  
A) KI B)  $\text{H}_2\text{S}$  C)  $\text{NH}_3$  D)  $\text{CO}_2$

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12. Van der Waals forces are greatest between the molecules of

- A) iodine                      B) bromine  
C) chlorine                    D) fluorine

13. Van der Waals forces will be the strongest between molecules that have a

- A) large number of electrons and are a small distance apart.  
B) large number of electrons and are a great distance apart.  
C) small number of electrons and are a great distance apart.  
D) small number of electrons and are a small distance apart.

14. Water has a higher boiling point than hydrogen sulfide because water has

- A) smaller molecules.  
B) a smaller molecular mass.  
C) stronger intermolecular attractions.  
D) weaker intermolecular attractions.

15. Dipole attractions are strongest between molecules of

- A) Cl<sub>2</sub>    B) CH<sub>4</sub>    C) HCl    D) NaCl
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