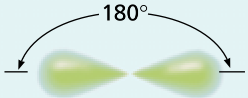
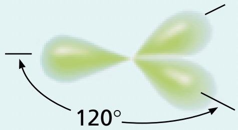
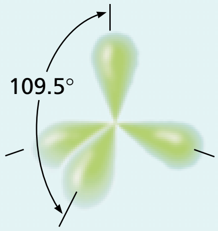
TABLE 6 Geometry of Hybrid Orbitals

Atomic orbitals	Type of hybridization	Number of hybrid orbitals	Geometry
s, p	*sp*	2	 Linear
s, p, p	sp^2	3	 Trigonal-planar
s, p, p, p	sp^3	4	 Tetrahedral

The linear geometry of molecules such as beryllium fluoride, BeF_2, (see **Table 5**) is made possible by hybridization involving the *s* orbital and one available empty *p* orbital to yield *sp* hybrid orbitals. The trigonal-planar geometry of molecules such as boron fluoride, BF_3, is made possible by hybridization involving the *s* orbital, one singly occupied *p* orbital, and one empty *p* orbital to yield sp^2 hybrid orbitals. The geometries of *sp*, sp^2, and sp^3 hybrid orbitals are summarized in **Table 6.**

Intermolecular Forces

CHEMISTRY INTERACTIVE TUTOR
Module 4: Chemical Bonding

As a liquid is heated, the kinetic energy of its particles increases. At the boiling point, the energy is sufficient to overcome the force of attraction between the liquid's particles. The particles pull away from each other and enter the gas phase. Boiling point is therefore a good measure of the force of attraction between particles of a liquid. The higher the boiling point, the stronger the forces between particles.

The forces of attraction between molecules are known as *intermolecular forces.* Intermolecular forces vary in strength but are generally weaker than bonds that join atoms in molecules, ions in ionic compounds, or metal atoms in solid metals. Compare the boiling points of the metals and ionic compounds in **Table 7** on the next page with those of the molecular substances listed. Note that the values for ionic compounds and metals are much higher than those for molecular substances.