- molecular substances typically do not conduct heat, electricity because there are no free-moving E or other charged particles
- intermolecular forces related to boiling point of liquid, melting point of solid

=>the stronger the intermolecular forces between the particles of solid, the higher the temperature required to melt it

Ionic Solids

- consist of oppositely charge ions that attract each other
- forces of attraction=quite strong, extend throughout crystal (ex.NaCl)
- oppositely charged ions: close to each other, similar charge: farther =>maximizes attractions, minimizes repulsions=greatest stability
- ionic solids tend to be: hard and brittle, high melting points
 =>ionic bonds quite strong
- also poor conductors of heat and electricity
 =>ionic substance in liquid state (only exists at high temp.) can conduct electricity

because: ions are free to move about in liquid state=carry electric current

Covalent-Network Solids

- atoms are bonded to each other with strong covalent bonds w/o forming molecules; instead forms network extending throughout solid crystal
- have high melting points, corresponding to the bleaking of strong covalent bonds
- ex. diamond form of C (diamond, graphite=natorally occurring forms of C)
- different much res of diamond and graphite produce different physical
- properties, although the same element C diamond: every C atom bonds to 4 other C atoms in giant 3-D network of covalent bonds
- graphite: C atom covalently bonds to 3 other C atoms in a planar arrangement; planes/"sheets" are held together by dispersion forces that are weaker than C-C bonds
- E found between planes are free to move, like valence E in metals =>graphite: electrical conductor, diamond is not
- "sheets" can also slide past each other easily=used in pencils