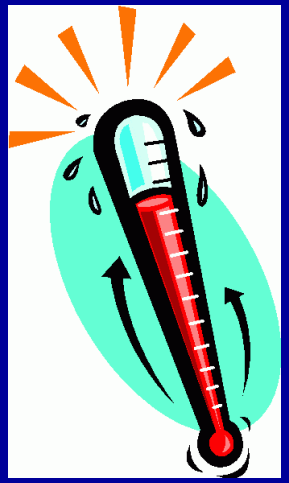
Phase Changes

Ps 3.7

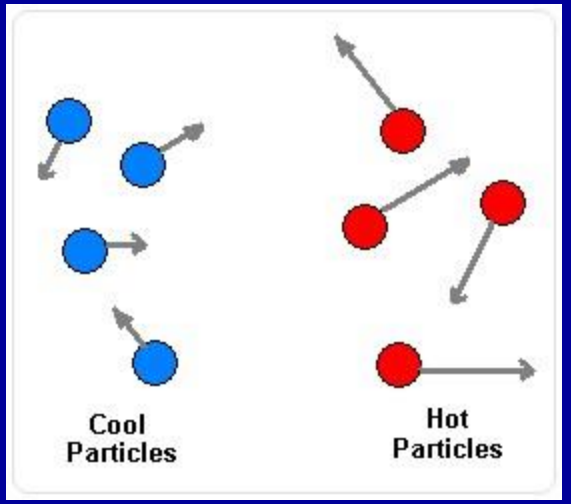
Heat is a form of energy.

- Temperature: a measure of the average kinetic energy of the particles in a substance.
- Particles move faster at higher temperatures and move slowly at lower temperatures.



Heat is a form of energy.

- Phase Change: physical change that occurs when a substance changes state.
- Due to changing the movement of particles by adding energy



- If energy is added to a substance the energy of the particles will increase
- Evidence for this statement:
  - Temperature increases
  - Phase change occurs

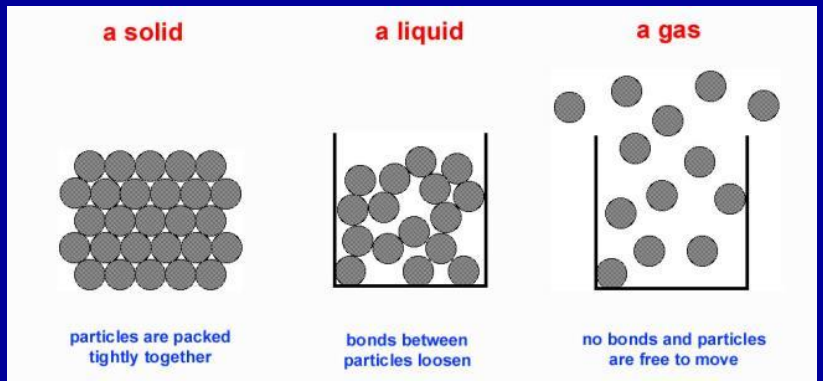
Melting Point/Freezing Point

- Temperature at which a phase change occurs where the liquid and solid phases are in equilibrium with each other
- If heat is added
  - Bonds break and solid will melt
- If heat is taken away
  - Bonds form and a liquid will freeze

Freezing Point

- Liquid → Solid
- Freezing pt. remains constant until all liquid has solidified.

- Heat is taken away, bonds will form between particles and a liquid will freeze.



Melting Point

- Solid → Liquid
- Melting point remains constant until all solid has melted.

- Heat is added, bonds will break and solid melts.

Phase Change

- Sublimination → Particles change from a solid → gas
- Example: Dry Ice
- Boiling Point → temp. where a liquid changes into a gas

Heat + liquid → gas

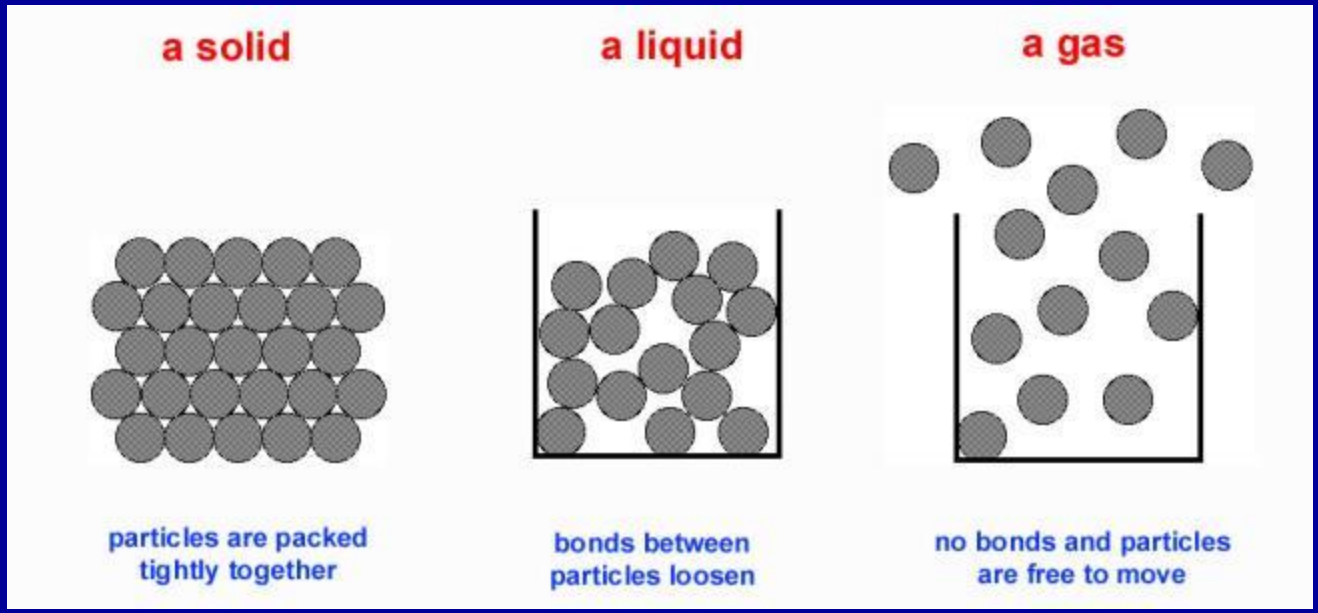
- Particles move faster, temperature increases until temperature of liquid reaches boiling point.

Heat + liquid → gas

- Temperature of liquid = Boiling pt.
- More heat is added to substance
- Temp. will not change!

Heat + liquid → gas

- Extra heat is used to break bonds between molecules of the liquid.
- Changes phase to a gas.



Heat + solid → liquid

- Particles move faster, temperature increases until temperature of solid reaches a melting point.

Heat + solid → liquid

- Temperature of solid = Melting pt.
- More heat is added to the substance.
- Temp. will not change!

Heat + solid → liquid

- Extra heat is used to break some of the bonds between molecules of the solid.
- Changes phase to a liquid.

Temperature Vs. time graph that shows boiling point and melting/freezing point