Physical Properties of Matter Review

1. solid, liquid, gas, plasma

2. (a) - particles are close together
   - strong intermolecular forces between particles

   (b) - particles are further apart than in a solid
   - intermolecular forces weaker than in a solid

   (c) - particles are very far apart
   - no intermolecular forces
   - collisions are elastic
   - particles are in constant motion

3. ionic crystalline
   - each ion is surrounded by ions of opposite charge
   - strong, brittle
   - ex) NaCl, KBr

   covalent network
   - atoms that can form multiple covalent bonds
   - ex) C, Si

4. Kinetic energy is directly proportional to temperature.
   (as temperature increases, kinetic energy increases)

5. (a) 7 - 9 minutes
   (b) 60°C
   (c) 100°C

(6) (a) - particles gain energy (from surroundings or external heat source)
- the energy is absorbed by the particles
- when the particles gain enough energy to change phase they do
- this continues until all the particles have changed phase.

(b) - particles gain energy
- the energy is absorbed by the particles
- when the particle has enough energy it changes to a vapor forming a micro-bubble
- if the vapor pressure is greater than the atmospheric pressure, the bubble rises to the surface and the vapor escapes.

(c) - particles near the surface with enough energy to escape do
- since these particles have more kinetic energy than the others, the average kinetic energy of the remaining particles decreases.
- lower average kinetic energy means lower temperature (ie. cooling)

(7) (a) neither
(b) A
(c) A

(8) (a) graph on next page
(b) 53°C
(c) temperature is increasing
(d) the melting point "plateau" and the boiling point "plateau" would occur at different temperatures.

Heating Curve

Physical Properties of Matter Review Question 8(a)