Name: _____ Practice Ph11 3-2

1. How much time is required to raise the temperature of 1.50 kg of water from 10.0°C to 90.0°C water using a 1.50 x 10^3 W electric kettle that is 75.0% efficient?
   (The specific heat of water is 4.18 x 10^3 J/Kg·C°)

2. How much heat must be added to 250 g of methanol to raise its temperature by 15 ºC? The specific heat of methanol is 2450 J/kgºC.

3. A person tried to heat up her bath water by adding 5.0 L of water at 80 ºC to 60.0 L of water at 30.0 ºC. What is the final temperature(in ºC) of the water?

4. The lowest temperature possible in nature is
   a) 4° K
   b) 0° C
   c) – 273° C

5. If the same amount of heat energy is supplied with-out loss to two different substances of equal mass, their final temperatures may be different because they have different
   a) specific heat capacities
   b) densities
   c) volumes
   d) coefficients of expansion
   e) abilities to conduct heat

6. Heat is
   a) the average kinetic energy of molecules
   b) a fluid called Joules
   c) a nonmaterial substance
   d) a transfer of energy because of a difference in temperature

7. By what method is heat energy transferred from an electric stove's element to a pot placed on the element?
   a) Infrared rays
   b) Radiation
   c) Convection
   d) Conduction

8. When two objects are at thermal equilibrium, they
   a) melt
   b) contain the same amount of heat
   c) have the same thermal energy
   d) are at the same temperature

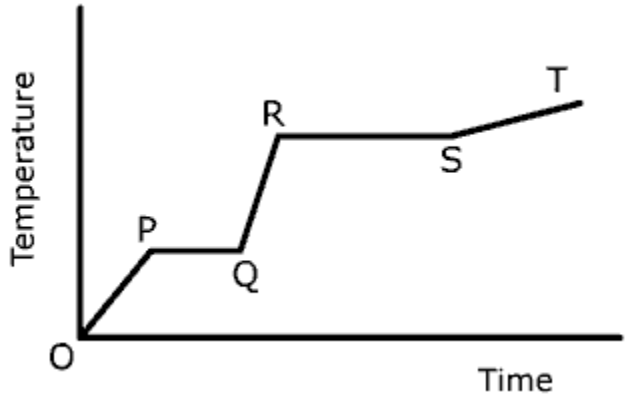
9. If the average kinetic energy of the particles that make up a liquid increases,
   a) the liquid changes state
   b) the liquid loses heat to its surroundings
   c) the temperature of the liquid increases
   d) all of the above take place

10. Hydrogen and Oxygen molecules in a sample gas have the same temperature. Given that Oxygen has more mass than Hydrogen, this means the hydrogen molecules, on the average, have the same
    a) speed, but more kinetic energy
    b) speed, but less kinetic energy
    c) speed and the same kinetic energy
    d) kinetic energy, but less speed
    e) kinetic energy, but more speed

11. How much heat is needed to raise the temperature of 20 g of water 5.0° C?
    (c= 4200 J/(kg°C)
    a) 20 J
    b) 100 J
    c) 5.0 J
    d) 42 000 J
    e) 420 J

12. A piece of metal will feel colder to the touch than a piece of wood at the same temperature. Why is this so?
    a) wood, in general, is a poor insulator
    b) metal is colder than wood
    c) metal, in general, has a higher heat capacity then wood
    d) metals, in general, are better heat conductors than wood

13. A solid is heated at a constant rate until it reaches the vapor state. The temperature of the substance changes with time as shown in the graph below. Which part(s) of the graph indicate(s) that the substance exists in solid-liquid and liquid-vapor state?



a) OP, QR, ST
b) OP, ST
c) PQ, RS
d) OP

14. The heat capacity of an object is defined as
a) the change in temperature produced by the addition of 1 J of heat energy
b) the amount of heat energy to raise its temperature by 1° C
c) the amount of heat energy needed to change its state without changing its temperature
d) the amount of heat energy per kilogram to raise its temperature by 1° C
e) the ratio of its specific heat capacity to that of water