A-Day: Due Fri., Jan 12 (Assigned: 1/10)
B-Day: Due Tues., Jan 16 (Assigned: 1/11)

Heat 3—Review

Half-test next time. Make sure you can redo all of the problems from the homework.
If you got help on the homework—redo it yourself until you can do it!

1) A 15 kg piece of Aluminum (Cp = 899) at 75ºC is placed in 20 kg of 10ºC water (Cp = 4186). Find the final temperature went the two come to thermal equilibrium.

2) Convert 345K to Celsius.

3) Convert 100ºF to Celsius.

4) 12 kg of 30ºC water is raised to its boiling point and then completely boiled into steam. How much heat is necessary to do the entire process? ($Cp_{water} = 4186$) ($Lv = 2.26x10^6$) Give your answer in scientific notation.

5) Conduction (1), Convection (2), or Radiation (3)?
   A) ____How you could get heat thru a window.
   B) ____Cannot occur in a solid.
   C) ____Will be faster when something is wet.

6) Endothermal (N) or Exothermal (X)?
   A) ____Heat is added to a reaction
   B) ____A reaction gets cold.
   C) ____A reaction gets hot.
   D) ____Boiling water?
   E) ___ A reaction gives off heat?
   F) ___ Heat is absorbed?
   G) ___ Heat is given off?
   H) ___ Freezing water?

7) When water freezes, does it expand or contract?

8) Is this normal or exceptional (do a lot of other substance do this or is water special)?

9) Is ice more dense or less dense than water?

10) Does water float or sink?

11) Which is a better conductor, water or ice?

12) Which is a better insulator, water or ice?

13) Does a pond or lake freeze from the top down or from the bottom up?

14) OK—put ALL of the above together and explain to me why the properties of water allow fish to survive in the winter.

15) Which is harder to cool down: water or air?

16) Why is it that places that are close to oceans don't have a large temperature change throughout the year (compared with inland).

More on back

Heat 3—Review

17) Which will require more heat to raise its temperature?
   A. A 20 kg mass of water or a 10 kg mass of water?
   B. 10 kg of copper or 10 kg of water?
   C. 10 kg of 1ead (Cp = 128) or 10 kg of silver (Cp = 234).
   D. 10 kg of water changing 20ºC or 10 kg of water changing 40ºC?
   E. 10 kg of ice melting (Lf = 3.33×10^5) or 10 kg of water boiling to steam (Lv = $2.2.6 \times 10^6$)?

18) 1.24×10^5 J of heat is added to 80 kg of water originally at 35º. If Cp of water = 4186, what is the final temperature of the water?

19) Which are moving faster:
   A. ____ Cold atoms or hot atoms?
   B. ____ Liquid molecules or solid molecules?
   C. ____ Molecules before or after condensation?
   D. ____ Water at 20ºC or at 50ºC?

20) What is sublimation?

21) Why do ice cubes in the freezer eventually "disappear"?