Thermochemistry

Read pg. 152, 153.

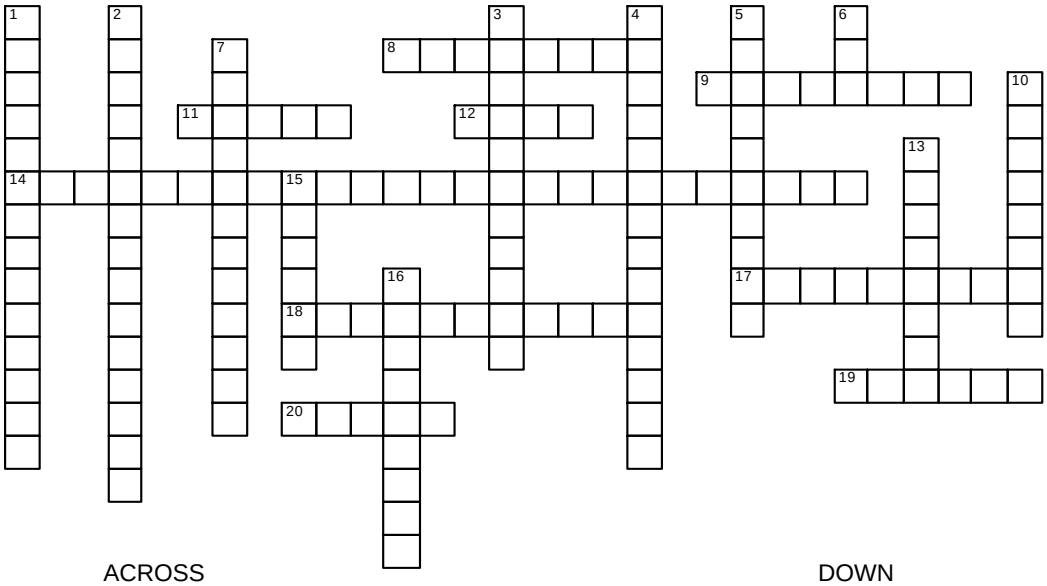
1. Distinguish between these terms: specific heat capacity, specific heat, heat capacity, molar heat capacity.
2. For yesterday's lab, find:
   a) q (the energy released/absorbed),
   b) the specific heat (capacity) of the water,
   c) the heat capacity of the water, and
   d) the molar heat capacity of the water.
3. Try PE 2 (Joules only) on page 153.
4. Can the specific heat capacity of wax be determined from our data? Explain.
5. 5 g of olive oil was heated from 20°C to 80°C. How much energy was used to heat the oil?
6. A 3.1 g ring was heated using 10 J. The temperature of the ring rose by 17.9°C. Calculate specific heat and heat capacity. Is the ring pure gold?

Read "The unusual Thermal Properties of Water" on pg. 154.

7. Try questions 5.15, 5.16, and 5.18 on page 174.

Use section 5.3 and 5.4 (pages 154 – 161) to help you complete the questions below.

8.



ACROSS

8. The sign of an enthalpy change that is exothermic.
9. The sign q has for an endothermic change.
11. The difference between heat capacity & specific heat capacity.
12. A played out 90's expression; also a type of calorimeter.
14. Energy is neither created nor destroyed, only transferred and transformed.
17. A substance that slows the transfer of heat.
18. Energy increases (is absorbed).
19. The type of pressurized gas that is likely to be passed into a calorimeter through a valve (fig. 5.5)
20. A compound that has a high specific heat.

DOWN

1. H products - H reactants. Equal to q when all the change in energy occurs as heat.
2. The study of the energy changes in chemical reactions.
3. An apparatus used in the determination of the heat of a reaction.
4. Symbolized as q.
5. Energy decreases (is released).
6. exo
7. That part of the universe other than the system being studied.
10. That which divides a system from its surroundings.
13. The heat content of a system (the total energy of a system).
15. That part of the universe we wish to study.
16. The type of calorimeter made up of two nested Styrofoam cups.

9. Enthalpy is made up of what kinds of energy? Explain why it is not possible to calculate enthalpy.
10. Suggest an example of a chemical reaction where q does not equal ΔH.
11. Using our simple calorimeter (below) as a model, label the bomb calorimeter with: system, boundary, endothermic, and exothermic. Explain how ΔH would be calculated using a bomb calorimeter.