CHEM1001 Worksheet 9 – Answers to Critical Thinking Questions

The worksheets are available in the tutorials and form an integral part of the learning outcomes and experience for this unit.

Model 1: Calorimetry

1. When ΔT is negative: when the temperature lowers.

2. $c = C / M$ or $C = c \times M$ where M is the molar mass.

3. 420 J

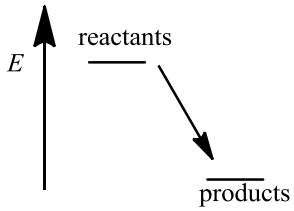
4. Heating up water by the same amount as olive oil requires more energy.

5. It would take 0.31 J to heat up if pure. The necklace is not pure.

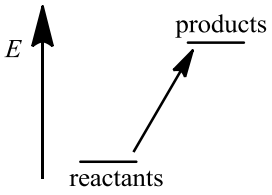
6. The 'feel' of heat requires a difference in heat capacity *and* a means to transfer the heat (thermal conductivity). The thermal conductivity of a metal like gold is very good so heat transfers rapidly to it. This is a consequence of the presence of easy to move electrons in a metal. These are not present in wood so its thermal conductivity is poor.

Model 2: Energy

1. (a)



(b)



2. (a) exothermic (b) endothermic
"Thermic" = caused by heat.

3. Colder.

4. Negative.

5. Stronger in the products than in the reactants.

6. (a) $\Delta H < 0$ (i.e. negative) (b) $\Delta H > 0$ (i.e. positive)