Fill in the following table:

| | energy (kJ/mol) | energy (J/molecule) | $\lambda$ from $\lambda = hc/E$ |
|---|---|---|---|
| heating from 25°C to 100°C | | | |
| boiling at 100°C | | | |
| heating from 100°C to 1000°C | | | |
| decomposing into elements | | | |
| decomposition into atoms | | | |

1. $c_{H_2O\ (l)} = 4.19\ J/g{\cdot}°C$

2. $\Delta H°_f = -241.8\ kJ/mol\ H_2O_{\ (g)}$, $\Delta H°_f = -285.8\ kJ/mol\ H_2O_{\ (l)}$

4. $c_{H_2O\ (g)} = 33.6\ J/mol{\cdot}K$

6. $O{-}H \rightarrow O + H \qquad \Delta H° = 429.91\ kJ/mol{\cdot}rxn$

7. d) $N_A = 6.022 \times 10^{23}$ /mol, $h = 6.626 \times 10^{-34}$ J·s, and $c = 2.998 \times 10^{8}$ m/s