## Module 4 - Engaging Activities

Evaluate the following. Show your solution.

1. How many joules are required to heat 250 grams of liquid water from 0 to 100 °C
2. How many joules are required to melt 100 grams of water?
3. How many joules are required to boil 150 g of water?
4. How many joules are required to heat 200 g of water from 25 °C to 125 °C
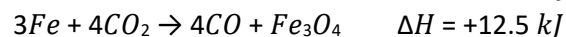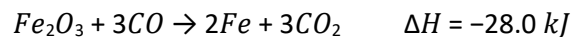
Performance Tasks

Evaluate the following. Show your solution.

1. Hydrogen peroxide decomposes according to the following thermochemical reaction:

$$H_2O_{2(l)} \rightarrow H_2O_{(l)} + \frac{1}{2}O_{2(g)} ; \qquad \Delta H = -98.2\ kJ$$
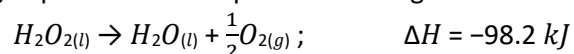
   Calculate the change in enthalpy ΔH, when 1.00 g of hydrogen peroxide decomposes.

2. Consider the following thermochemical equations:

$$Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2 \qquad \Delta H = -28.0\ kJ$$
$$3Fe + 4CO_2 \rightarrow 4CO + Fe_3O_4 \qquad \Delta H = +12.5\ kJ$$

   Calculate the value of ΔH (in kJ) for:

$$3Fe_2O_3 + CO \rightarrow CO_2 + 2Fe_3O_4$$