

Be sure to show all work, use the correct number of significant figures, circle final answers and use correct units in all problems.

1. Provide the missing information: (4 points)

A reaction "feels hot" as the chemicals react.

Sign of ΔH : **positive** **negative** *circle one*

A cold pack is needed after a sports injury.

Sign of ΔH : **positive** **negative** *circle one*

You watch some fireworks on the 4th of July. The fireworks are:

endothermic **exothermic** *circle one*

My reaction beaker forms ice on the outside as a reaction proceeds. The reaction is: **endothermic** **exothermic** *circle one*

2. Liquid water (45.0 g) is heated from 25.0 °C to 80.0 °C. (6 points)

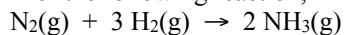
a. What is the heat capacity of liquid water (include units) (4 pts)

b. Calculate q for heating the water in Joules.

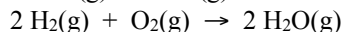
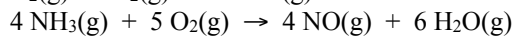
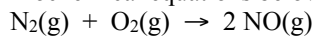
c. Calculate q for heating the water in kilojoules (kJ).

3. If 25 J are required to change the temperature of 5.0 g of substance A by 2.0 K, what is the specific heat of substance A? (4 points)

4. Determine ΔH for the following reaction,



given the thermochemical equations below. (6 points)



$$\Delta H = +180.8 \text{ kJ}$$

$$\Delta H = -906.2 \text{ kJ}$$

$$\Delta H = -483.6 \text{ kJ}$$

Answers

1. Provide the missing information: (4 points)

negative
positive
exothermic
endothermic

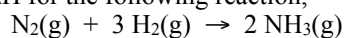
2. Liquid water (45.0 g) is heated from 25.0 °C to 80.0 °C. (6 points)

4.184 J/g °C
1.04 x 10⁴ J
10.4 kJ

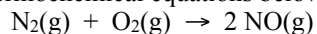
3. If 25 J are required to change the temperature of 5.0 g of substance A by 2.0 K, what is the specific heat of substance A? (4 points)

2.5 J/gK

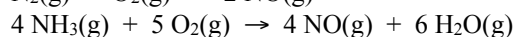
5. Determine ΔH for the following reaction,



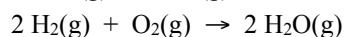
given the thermochemical equations below. (6 points)



$$\Delta H = +180.8 \text{ kJ}$$



$$\Delta H = -906.2 \text{ kJ}$$



$$\Delta H = -483.6 \text{ kJ}$$

$\Delta H = -91.5 \text{ kJ}$