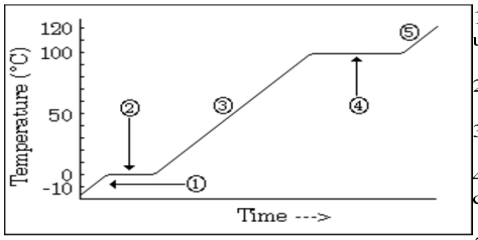
Thermochemistry Answers - Worksheet Number One

We will ignore any heats losses to the walls of the container and losses to the air. These is a typical position to take since, in a real experiment, both would have to be accounted for, making for much more complexity.



1. q = (20.0 g) (20.0 °C) (2.02 J/g °C). (Note C_p of gas is used.)

2. q = (15.0 g) (25.0 °C) (2.02 J/g °C)

3. q = (120.0 g) (22.0 °C) (4.184 J/g °C)

4. 800,000 J = (720.0 g) (x) (2.02 J/g °C). (Notice the conversion to J.)

5. q = (85.0 g) (190.0 °C) (0.129 J/g °C). Divide answer by 1000 to obtain kJ.

6. 41.72 J = (18.69 g) (17.0 °C) (x)

7. (333.51 J/g) (18.015 g/mol)

8. 41,840 = (x) (6.5 °C) (4.184 J/g °C)

9. Here's the graph:

The five number sections correspond to the following:

1) Δt = 15 °C as a solid
2) melting (no temperature change)
3) Δt = 100 °C as a liquid
4) boiling (no temperature change)
5) Δt = 20 °C as a gas

The five solutions are:

1) (50.0 g)(15 °C) (2.06 J/g °C)
2) (50.0 g / 18.0 g/mol) (6.02 kJ/mol)
3) (50.0 g) (100 °C) (4.184 J/g °C)
4) (50.0 g / 18.0 g/mol) (40.7 kJ/mol)
5) (50.0 g) (20 °C) (2.02 J/g °C)

10. Here's the graph: