

Name _____

Period _____

Date: _____

Heating and Cooling Curves

- Directions:
- (1) Sketch the heating or cooling curves associated with water (use these to help you with the following problems).
 - (2) Calculate the amount of heat energy lost or gained during each temperature change.

$$c(\text{H}_2\text{O}_{(s)}) = 2.05 \text{ J/(gC}^\circ\text{)}$$

$$c(\text{H}_2\text{O}_{(l)}) = 4.18 \text{ J/(gC}^\circ\text{)}$$

$$c(\text{H}_2\text{O}_{(g)}) = 2.08 \text{ J/(gC}^\circ\text{)}$$

$$\Delta H_f = 334 \text{ J/g}$$

$$\Delta H_v = 2260 \text{ J/g}$$

1. 45g of H_2O changing in temperature from 110°C to -85°C
2. 15g of $\text{H}_2\text{O}_{(g)}$ changing in temperature from 100°C to -75°C
3. 20.5g of $\text{H}_2\text{O}_{(l)}$ changing in temperature from 100°C to -5°C
4. 57g of H_2O changing in temperature from -40°C to 150°C
5. 39g of H_2O changing in temperature from 134°C to -20°C
6. 17g of H_2O changing in temperature from 130°C to $\text{H}_2\text{O}_{(s)}$ at 0°C
7. 80g of H_2O changing in temperature from -24°C to 160°C
8. 80g of H_2O changing in temperature from 160°C to -24°C
9. 41g of H_2O changing in temperature from -70°C to $\text{H}_2\text{O}_{(g)}$ at 100°C
10. 4g of H_2O changing in temperature from -9°C to $\text{H}_2\text{O}_{(l)}$ at 100°C