

AP Chemistry

Name: _____ Score: _____

1. An exothermic reaction has a ΔH that is...
 - ☐ negative
 - ☐ positive
 - ☐ always zero
2. On an energy diagram, products below reactants means the reaction is...
 - ☐ exothermic
 - ☐ endothermic
 - ☐ at equilibrium
3. Heat flows from...
 - ☐ hot to cold
 - ☐ cold to hot
 - ☐ high to low pressure
4. Heat 100 g of water ($c = 4.18$) by 5 degrees. The heat (in J)?
_____ J
5. The temperature stays constant during a phase change.
 - ☐ True ☐ False
6. If burning 1 mol releases 500 kJ, how much does burning 3 mol release (in kJ)?
_____ kJ
7. Bonds broken total 600 kJ; bonds formed total 700 kJ. Estimate ΔH (in kJ).
_____ kJ
8. Products' $\sum \Delta H_f = -300$; reactants' $= -100$. Find ΔH_{rxn} (in kJ).
_____ kJ
9. Two steps have $\Delta H = -120$ kJ and $+30$ kJ. Their sum (in kJ)?
_____ kJ
10. A reaction that makes its container feel cold is...
 - ☐ endothermic
 - ☐ exothermic

☐ neither

AP Chemistry

1. **negative**

Releasing heat makes ΔH negative.

2. **exothermic**

Lower products mean energy was released – exothermic.

3. **hot to cold**

Heat always flows from the hotter object to the colder one.

4. **2090 J**

$$q = mc\Delta T = 100 \times 4.18 \times 5 = 2090 \text{ J.}$$

5. **True**

Heat breaks attractions instead of raising the temperature.

6. **1500 kJ**

ΔH scales with amount, so $3 \times 500 = 1500 \text{ kJ}$.

7. **-100 kJ**

$$\Delta H \approx 600 - 700 = -100 \text{ kJ (exothermic).}$$

8. **-200 kJ**

$$\Delta H_{rxn} = -300 - (-100) = -200 \text{ kJ.}$$

9. **-90 kJ**

$$-120 + 30 = -90 \text{ kJ.}$$

10. **endothermic**

Absorbing heat from your hand feels cold – endothermic.