

Name: _____

Date: _____ Per: _____

Chemistry

Assessments #14 & 15: Calorimetry & Thermochemistry PRACTICE

For each of the following questions or statements, select the most appropriate response and write its letter on the answer line:

- _____ 1. Which one of the following is an exothermic process?
A. ice melting
B. water evaporating
C. boiling soup
D. condensation of water vapor
- _____ 2. The internal energy of a system is always increased by:
A. adding heat to the system
B. having the system do work on the surroundings
C. withdrawing heat from the system
D. a volume compression
- _____ 3. Which one of the following is NOT a change in state of matter (or phase)?
A. solidification
B. vaporization
C. fission
D. deposition
- _____ 4. The reaction
$$4 \text{ Al (s)} + 3 \text{ O}_2 \text{ (g)} \rightarrow 2 \text{ Al}_2\text{O}_3 \text{ (s)} \quad \Delta H^\circ = -3351 \text{ kJ}$$

is _____, and therefore heat is _____ by the reaction.
A. endothermic, released
B. endothermic, absorbed
C. exothermic, released
D. exothermic, absorbed
- _____ 5. The specific heat capacity of lead is $0.13 \frac{\text{J}}{\text{g}^\circ\text{C}}$. How much heat (in J) is required to raise the temperature of 15 g of lead from 22°C to 37°C ?
A. 5.8×10^{-4}
B. 0.13
C. 2.0
D. 29
- _____ 6. The specific heat of liquid bromine is $0.226 \frac{\text{J}}{\text{g}^\circ\text{C}}$. How much heat (J) is required to raise the temperature of 31.2 g of bromine from 25.00°C to 27.30°C ?
A. 5.20
B. 10.4
C. 16.2
D. 32.4

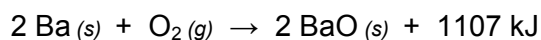
- _____ 7. A sample of aluminum metal absorbs 9.86 J of heat, upon which the temperature of the sample increases from 23.2°C to 30.5°C. Since the specific heat capacity of aluminum is 0.90 $\frac{\text{J}}{\text{g}^\circ\text{C}}$, the mass of the sample is:
- A. 1.5 g
 - B. 8.1 g
 - C. 65 g
 - D. 72 g

- _____ 8. The value of ΔH° for the reaction below is +128.1 kJ/mol:



How much heat is released when 15.5 g of CH_3OH decomposes as shown in the equation?

- A. 8.3 kJ
 - B. 32 kJ
 - C. 62 kJ
 - D. 130 kJ
- _____ 9. Given the reaction:



How much heat is released when 5.75 g of BaO is produced?

- A. 20.8 kJ
 - B. 23.2 kJ
 - C. 56.9 kJ
 - D. 96.3 kJ
- _____ 10. The average fuel value of sugars is 17 kJ/g. Assuming that the sugar is the only fuel source, what is the fuel value of a 500. mL serving of Kool-Aid containing 100. g of sugar?
- A. 4.2×10^4 kJ
 - B. 1.7×10^3 kJ
 - C. 2.1×10^5 kJ
 - D. 5.0×10^2 kJ

Answers

1. D
2. A
3. C
4. C
5. D
6. C
7. A
8. C
9. A
10. B