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ok test correction

WORKSHEET Heat and Calorimetry

1. Define: energy, work, potential energy, kinetic energy.
2. What type of reaction absorbs heat?
3. In what type of reaction do the products have less potential energy than the reactants?
4. Define: temperature, heat, joule, calorie, specific heat.
5. What is the specific heat of water? How many joules equal one calorie?
6. What is the relationship between calories and the Calories used to measure food energy?
7. A 10.0 g object loses 52.0 J of heat as its temperature goes from 27.0 °C to 18.0 °C. What is the object's specific heat?
 $.578 \frac{J}{g^{\circ}C}$
8. How much heat would be needed to raise the temperature of a 25.0 g piece of iron from 20.0 °C to 100. °C? (c_p iron = .449 J/g°C)
 $898 J$
9. A reaction takes place in a calorimeter containing 250. g of water at 20.0 °C. The temperature of the water drops to 18.0 °C. Calculate the heat given off or absorbed by the reaction.
 $+ 2090 J$
10. A 12.0 g piece of metal with a temperature of 100. °C is placed in a calorimeter holding 200. g of water at 20.0 °C. The temperature of the water rises to 22.0 °C. What is the specific heat of the metal?
 $1.79 \frac{J}{g^{\circ}C}$
11. 7.50 grams of a substance absorbs 44.2 Joules of heat as its temperature rises from 10.0 °C to 20.0 °C. What is the substance's specific heat?
 $\frac{44.2 J}{(7.5 g)(20-10)^{\circ}C} = .589 \frac{J}{g^{\circ}C}$
12. Lead has a specific heat of 0.128 J/g°C. How much heat would a 150.0 g piece of lead give off as its temperature drops from 85.0 °C to 50.0 °C?
 $(150 g)(.128 \frac{J}{g^{\circ}C})(50-85^{\circ}C) = -672 J$
13. A chemical reaction takes place inside a calorimeter which contains 50.0 grams of water. The temperature of the water rises from 21.0 °C to 23.0 °C. Calculate the heat given off by the reaction.
 $heat = -(50 g)(4.184)(2^{\circ}C) = -418 J$
14. A 10.0 gram piece of metal is heated to 100.°C. It is placed in a calorimeter containing 75.0 grams of water at 25.0 °C. The final temperature of the metal and water is 27.0 °C. What is the specific heat of the metal?
 $(10 g)(27-100) = -(75 g)(4.184)(27-25)$
 $-.73 = -2$
 $.860 \frac{J}{g^{\circ}C}$
15. Aluminum has a specific heat of 0.902 J/g°C. How much heat is needed to increase the temperature of a 70.0 g piece of lead from 25.0 °C to 150.0 °C?
 $(70 g)(.902 \frac{J}{g^{\circ}C})(150-25) = 7892 J$
16. A chemical reaction takes place inside a calorimeter which contains 50.0 grams of water. The temperature of the water goes from 24.0 °C to 21.0 °C. Calculate the heat of reaction.
 $= -(50 g)(4.184)(-3) = +628 J$
17. An 8.0 gram piece of metal is heated to 100.°C. It is placed in a calorimeter containing 90.0 grams of water at 23.0 °C. The final temperature of the metal and water is 27.0 °C. What is the specific heat of the metal?
 $(8 g)(27-100) = -(90 g)(4.184)(27-23)$
 $-.73 = -4$
 $c = 2.58 \frac{J}{g^{\circ}C}$