Dougherty Valley HS Chemistry
Thermochemistry – Specific Heat

Worksheet #2

Name: **Period:** **Seat#:**

Conceptual Questions

1) Explain the difference between heat and temperature.

2) Define specific heat and provide the units for it.

3) Which will heat up *slower>* Explain why.
Metal A – specific heat = $0.35\frac{J}{g°C}$
Metal B – specific heat = $0.12\frac{J}{g°C}$

4) Draw a generic graph for an endothermic reaction. Is energy being lost or gained?

5) Draw a generic graph for an exothermic reaction. Is energy being lost or gained?

6) Define convection.

7) Define conduction.

8) Define radiation.

Mathematical Questions

- Identify the variables involved
- Show plugging in the variables to the correct places in the equation
- Get an actual answer, including units! Box your answer!
- Don't forget - you must show units and any conversions that might be involved.
- You can either rearrange your equation before you plug in your variables, or after. Do what works for you!
- Some answers are provided at the end. They are underlined.

9) Find the amount of heat (Q) needed to raise the temperature of 5.00 g of a substance from 20.0°C to 30.0 C if the specific heat of the substance is 2.01 J/g°C. *100.5 J*

Variables
Q = ?
m = 5.00 g
C = 2.01 J/g C
Δ T = 10 C

10) A metal with a specific heat of 0.780 J/g°C requires 45.0 J of heat to raise the temperature by 2.00°C. What is the mass of the metal? *28.8 g*

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11) A metal with a specific heat of 0.70 J/g°C and a mass of 8.00 g absorbs 48.0 J of heat. What will be the temperature change of the metal? *8.57°C*

12) What is the specific heat of a substance that absorbs 2.5 x 10^3 joules of heat when a sample of 1.0 x 10^4 g of the substance increases in temperature from 10.0°C to 70.0°C? *C = 0.0042 J/g°C*

The table below shows the specific heats for some common substances. Use this table for the following questions.

Substances	Specific Heat (J/g°C)
Aluminum	0.90
Copper	0.38
Gold	0.13
Ice	2.09
Iron	0.450
Lead	0.130
Steam	1.87
Water	4.18

13) How much heat (Q) is needed to raise the temperature of 8.00 g of lead by 10.0°C? *10.4 J*

14) The temperature of a 250.0 g ball of Iron increases from 19.0°C to 32.0°C. How much heat did the iron ball gain? *1462.5 J*

15) The temperature of a 100.0-g block of ice increases by 3.00°C. How much heat does the ice receive? *627 J*

16) Ten grams of steam absorbs 60.0 J of heat. What is the temperature increase of the steam? *3.2°C*

17) A piece of lead loses 78.0 J of heat and experiences a decrease in temperature of 9.0°C. What is the mass of the piece of lead? *66.7 g*