**Chemistry Unit 2 Matter and Energy Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Heat Worksheet**

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| **Specific Heat Capacity**  |  **c in J/g K** |  **c in cal/g ◦C** |
|  Aluminum | 0.900 | 0.215 |
|  Bismuth | 0.123 | 0.0294 |
|  Copper | 0.386 | 0.0923 |
|  Brass | 0.380 | 0.092 |
|  Gold | 0.126 | 0.0301 |
|  Iron | 0.460 | 0.101 |
|  Lead | 0.128 | 0.0305 |
|  Silver | 0.233 | 0.0558 |
|  Tungsten | 0.134 | 0.0321 |
|  Zinc | 0.387 | 0.0925 |
|  Mercury | 0.140 | 0.033 |
|  Alcohol(ethyl) | 2.4 | 0.58 |
|  **Water** | **4.186** | **1.00** |
|  Ice (-10 C) | 2.05 | 0.49 |
|  Granite | .790 | 0.19 |
|  Glass | .84 | 0.20 |

1. What is the difference in temperature and heat?
2. \_\_\_**\_\_\_\_\_\_\_\_\_\_\_**\_\_ is energy in motion. \_\_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_**\_\_ is stored energy. List 4 kinds of each type of energy.
3. When you heat a substance and the temperature rises, how much it rises depends upon its \_\_\_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**\_\_\_.
4. The definition of specific heat capacity is the amount of \_\_\_\_\_\_\_\_\_\_\_\_\_ required to do what?
5. You can touch the aluminum pan of a TV dinner soon after is has been taken from the oven, but you will burn your hand if you touch the food it contains. Explain.
6. 250 g of water goes from 22°C to 67°C. How much heat energy is needed? Is this an endothermic or exothermic process?
7. 150 g of water goes from 88°C to 16°C. how much heat energy is released? Is this an endothermic or exothermic process?
8. What is the specific heat capacity of an unknown metal if a 35.8 g sample goes from 25°C to 80°C when 825 J of heat is added?
9. What is the final temperature when 675 J of energy is added to a 85.0 g sample of copper initially at 18°C?
10. A quantity of iron is heated from 25.0°C to 36.4°C by absorbing 325 J of heat energy. What is the mass of the iron?
11. A 91.5 g sample of an unknown metal releases 6.40 x 102 J as it cools from 55.0°C to 25.0°C. What is the specific heat of the sample? What is this metal?
12. Suppose burning 2.0 g of a food sample raises the temperature of 110 g of water 10.0°C.

a) How many calories of energy were needed to raise the temperature of 110 g of water 10.0°C?

b) How many calories are present in 1 gram of the food?

c) How many Calories per gram were in 1 gram of the food sample?

d) If you ate 35 g of the food, how many Calories would you consume?