Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_

CALORIMETRY COMBINED WORKSHEET.

**Part 1: Simple Calculation**

1. What is the specific heat of aluminum if the temperature of a 27.4 g sample of aluminum is increased by 9 degree C when 302 J of heat is added?
2. How much heat must be added to a 8.11 g sample of gold to increase its temperature by 6 degree C? The specific heat of gold is 0.42 J/gC.
3. If 40.5 J of heat is added to a 15.4 g sample of silver at 20 degree C, how much will the temperature increase by? The specific heat of silver is 0.235 J/gC.

**Part 2: Calorimetry and Heat Transfer Calculation**

1. A 2.50 g sample of zinc is heated, then placed in a calorimeter containing 65.0 g of water. Temperature of water increases from 20.00 to 22.50 degrees C. The specific heat of zinc is 0.390 J/gC. What was the initial temperature of the zinc metal sample? (final temperatures of zinc and water are the same)
2. A 13.5 g sample of gold is heated, then placed in a calorimeter containing 60.0 g of water. Temperature of water increases from 19.00 to 20.00 degrees C. The specific heat of gold is 0.130 J/gC. What was the initial temperature of the gold metal sample?

**Part 3: Phase Change Calculation:**

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| --- | --- | --- | --- |
|  | Specific Heat (J/gC) | Phase Change | Lattice Energy (kJ/mol) |
| Gas | 2.02 | Evaporation (boiling) | 40.65 |
| Liquid | 4.184 | Fusion (melting) | 6.02 |
| Solid | 2.0 |  |  |

1. Calculate the amount of heat (in J) required to bring 75 mL of water at 20 degree Celsius to 125 degree Celsius. (Given that water boils at 100 degree Celsius).
2. Calculate the amount of heat required to bring 50 gram of ice at – 15 degree Celsius to 130 degree Celsius. (Given that ice melts at 0 degree Celsius and water boils at 100 degree)