Extra Specific Heat WS (show your work & BOX your answers)

1. How many J of heat is required to raise the temp. of 200 g of water from 20°C to 50°C?
2. If 700 g of water loses 27 kJ of heat, what is its ΔT ?
3. Water is heated from 10°C to 50°C. During the process, 50 kJ of heat is added to the water. What is the mass of water heated?
4. What is the specific heat of an unknown substance, if 950. J of heat raises the temperature of a 20g sample from 18°C to 42°C?
5. Hg has a specific heat of 0.139 J/g°C. How much heat is required to raise the temperature of a 22.80 g sample from 16.1°C to 32.5°C?
6. How many kJ of heat are needed to raise the T of 1.50 L of water from 20°C to 37°C?

**The specific heats (C’s) of 3 different substances are listed as:**

 carbon tetrachloride: 0.856 J/g°C benzene: 1.74 J/g°C acetic acid: 2.05 J/g°C

1. 1.47 kJ of heat raised the temp of 19.70 g of an unknown substance by 36.4°C. Which of the substances listed above is the unknown substance?
2. How many kJ is released from a 2.00 L bottle of Surge when it cools from 70.0oF (294 K) to its freezing point? (Assume soda has the same properties as water.)
3. What mass of glass (C = 0.749 J/g°C) is needed to absorb 5.00 x 104 J of heat, if it starts at 26°C and has a final temp of 275°C?
4. What final temperature will 120 g of benzene at 7°C have after it absorbs 2.20 kJ of heat? The C of benzene is 1.74 J/g°C.
Recall that ΔT = (final temp - initial temp)
5. 3 kg of Osmium (Os) metal at 241 K is heated to 394 K. How much heat energy is needed for this? The C of Os is 0.130 J/g°C.
6. 14.22 g of a substance absorbs 1.77 kJ of heat. Its temperature changes from -23.0°C to 31.0°C. What is the specific heat of the substance?
7. Calculate the final temperatureof a sample of Tellurium (Te, C = 0.201 J/g°C), when 82.50 g of Te at 12.0°C releases 2.00 x 103 J of heat.

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