

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

- 7) 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?
- 8) How many kJ is released from a 2.00 L bottle of Surge when it cools from 70.0°F (294 K) to its freezing point? (Assume soda has the same properties as water.)
- 9) What mass of glass (C = 0.749 J/g°C) is needed to absorb 5.00×10^4 J of heat, if it starts at 26°C and has a final temp of 275°C?
- 10) 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 $\Delta T = (\text{final temp} - \text{initial temp})$
- 11) 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.
- 12) 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?
- 13) Calculate the final temperature of a sample of Tellurium (Te, C = 0.201 J/g°C), when 82.50 g of Te at 12.0°C releases 2.00×10^3 J of heat.

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