Heat Problems 3

Name:

<u>Show your work to receive credit!</u>

Density of water = 1 g/ml. $^oC = K - 273$ kilo (k) = 1000

$H = (m)(\Delta T)(c)$ $(\Delta T) = T_2 - T_1$ For water: $c = 4.2$ J/g $^oC = 1$cal/g ^oC

1. How many joules of heat are needed to raise the temperature of 460 g of water from 10.2^oC to 26.8^oC?

2. How much heat is released when 275g of water cools from 85.2 ^oC to 311.4 ^oK? Put your answer in calories. (Hint: all temperatures need to be in the same unit)

3. What temperature change will 100.0 ml of water undergo when it absorbs 1250 J of heat?

4. What will the change in temperature be if 422 calories of heat is released by 80.0 ml of water?

5. What will the final temperature be if 45.0 ml of water at 15.4 ^oC absorbs 3.25 x 10^3 calories of heat?

6. What was the initial temperature of 25.0 ml of water if it absorbed 1125 J of energy and ended up at a temperature of 80.0 °C?   What would this temperature be in Kelvin?

7. What is the mass of water present if it absorbs 1.25×10^6 J of heat as the temperature rises from 12.6 °C to 88.7°C?

8. What is the mass of an aluminum sample having a specific heat of .215 calorie/g °C if it releases 6.51×10^5 calories of heat and the temperature of the aluminum drops from 655°C to 598 °C?

9. What is the specific heat of lead if 30.0 g of lead increases in temperature by 250.0 °C as it absorbs 229.5 calories of heat?

10. If a 1.55×10^3 g sample of aluminum releases 9975 calories of heat as it cools from 328 °K to 25.0 °C, then what is the specific heat of the aluminum?