SPECIFIC HEAT-PROBLEMS

q= Joules c= J/g°C

m=grams ΔT= °C

Formula: Units:

1. A 15.75g piece of iron absorbs 1086.75 joules of heat energy, and its temperature changes from 25C to 175C. Calculate the specific heat capacity of iron
2. How many joules of heat are needed to raise the temperature of 10g of aluminum from 22C to 55C, if the specific heat of aluminum is 0.90 J/gC?
3. Calculate the specific heat capacity of a piece of wood if 1500g of the wood absorb 67,500 joules of heat, and its temperature changes from 32C to 57C
4. 100 g of 4C water is heated until its temperature is 37C. If the specific heat of water is 4.18J/gC, calculate the amount of heat energy needed to cause this rise in temperature
5. 25g of mercury is heated from 25C to 155C, and absorbs 455 joules of heat in the process. Calculate the specific heat capacity of mercury
6. What is the specific heat capacity of silver metal if 55g of the metal absorbs 47.3J of heat and the temperature rises 15C?
7. What mass of water will change its temperature by 3C when 525J of heat is added to it? The specific heat of water is 4.18 J/gC
8. A 0.3 g piece of copper is heated and fashioned into a bracelet. The amount of energy transferred by heat to the copper is 66300J. if the specific heat of copper is 390 J/gC, what is the change of the copper´s temperature?

For each of the following you will need to look up the heat capacity of the materials mentioned in the problem

1. If 20g of silver at 350C is mixed with 200g of water at 30C, find the final temperature of the system
2. If 26g of water at 18C are mixed with 49g of water at 70C, find the final temperature of the system
3. A 240g of water (initially at 20C) is mixed with an unknown mass of iron (initially at 500C). When thermal equilibrium is reached, the system has a temperature of 42C. Find the mass of the iron
4. 135g of aluminum (initially at 400C) is mixed with an unknown mass of water (initially at 25C). When thermal equilibrium is reached, the system has a temperature of 80C. Find the mass of the water
5. A 97g sample of gold at 785C is dropped into 323g of water, which has an initial temperature of 15C. If gold has a specific heat of 0.129J/gC, what is the final temperature of the mixture? Assume that the gold experiences no change in its state of matter