**Thermochemistry Problems - Worksheet Number Two**

[Solutions to most of 1 to 10 and 16-20](https://www.chemteam.info/Thermochem/Thermochem-WS2-Ans.html)

8. Determine the final temperature in each of the following problems:

a. 32.2 g of water at 14.9 °C mixes with 32.2 grams of water at 46.8 °C.  
b. 139 g of water at 4.9 °C mixes with 241 grams of water at 96.0 °C.  
c. 2.29 g of water at 48.9 °C mixes with 3.65 grams of water at 36.1 °C.  
d. 56.3 grams of water at 12.3 °C mixes with 46.2 grams of water at 78.1 °C.  
e. 14.2 grams of ice at -16.2 °C is placed in 250.0 grams of water at 70.0 °C.

9. A student places 42.3 grams of ice at 0.0 °C in an insulated bottle. The student adds 255.8 grams of water at 90.0 °C. Determine the final temperature of the mixture.

10. A student places 21.4 grams of ice at 0.0 °C and 13.1 grams of steam at 100.0 °C in a sealed and insulated container. Determine the final temperature of the mixture.

11. Determine the specific heat of a 150.0 gram object that requires 62.0 cal of energy to raise its temperature 12.0 °C.

12. Determine the heat required to convert 62.0 grams of ice at -10.3 °C to water at 0.0 °C. The specific heat capacity of ice is 2.02 J/g °C.

13. Determine the energy released when converting 500.0 g of steam at 100.0 °C to ice at -25.0 °C.

14. Determine the energy required to convert 32.1 grams of ice at -5.0 °C to steam at 100.0 °C.

15. Determine the energy required to raise the temperature of 46.2 grams of aluminum from 35.8 °C to 78.1 °C. Specific heat capacity of aluminum is 0.089 J/g °C.

16. Determine the final temperature when 450.2 grams of aluminum at 95.2 °C is placed in an insulated calorimeter with 60.0 grams of water at 10.0 °C.

17. Determine the mass of iron heated to 85.0 °C to add to 54.0 grams of ice to produce water at 12.5 °C. The specific heat of iron is 0.045 J/g °C.

20. 50.0 g of copper at 200.0 °C is placed in ice at 0 °C. How many grams of ice will melt?