Specific Heat Worksheet
Q=mΔTc
(1 cal. = 4.2 J; 1 J = 0.24 cal.)

1. What is the specific heat of a substance that absorbs 2500 joules of heat when a sample of 10000 g of the substance increases in temperature from 10.0°C to 70.0°C?

2. How many grams of water would require 22000 joules of heat to raise its temperature from 34.0°C to 100.0°C? The specific heat of water is 4.2 J/g·°C.

3. If 200 grams of water is to be heated from 24.0°C to 100.0°C to make a cup of tea, how much heat must be added? The specific heat of water is 4.2 J/g·°C.

4. A block of aluminum with a mass of 140 g is cooled from 98.4°C to 62.2°C with the release of 1080 joules of heat. What is the specific heat of aluminum?

5. A cube of gold with a mass of 192.4g is heated from 30.0°C to some higher temperature, with the absorption of 226 joules of heat. The specific heat of gold is 0.030 J/g·°C. What was the final temperature of the gold?

6. A total of 54.0 joules of heat are absorbed as 58.3 g of lead is heated from 12.0°C to 42.0°C. What is the specific heat of lead?

7. The specific heat of wood is 2.03 J/g·°C. How many **CALORIES** of heat are needed to increase the temperature of a 550 g piece of wood from -15.0°C to 10.0°C?

8. What is the total amount of heat needed to change the temperature of a 2.25 **kg** piece of silver from 0.0°C to 200.0°C? The specific heat of silver is 0.129 J/g·°C

9. Granite has a specific heat of 800 J/g·°C. What mass of granite is needed to store 1,500,000 J of heat if the temperature of the granite is to be increased by 15.5°C?

10. A 15.75 g piece of iron absorbs 1086.75 joules of heat energy, and its temperature changes from 25°C to 175°C. Calculate the specific heat capacity of iron.

11. How many **CALORIES** of heat are needed to raise the temperature of 10.0 g of aluminum from 22°C to 55°C, if the specific heat of aluminum is 0.90 J/g°C?

12. To what temperature will a 50.0 g piece of glass raise if it absorbs 5275 joules of heat and its specific heat is 0.50 J/g°C? The initial temperature of the glass is 20.0°C.

13. Calculate the specific heat of a piece of wood if 1500 g of the wood absorbs 67,500 joules of heat, and its temperature changes from 32°C to 57°C.

14. 100 **mL** of 4.0°C water is heated until its temperature is 37°C. If the specific heat of water is 1.0 cal/g°C, how many calories of heat are needed to cause this rise in temperature?

15. 25.0 g of mercury is heated from 25°C to 155°C, and absorbs 455 joules of heat in the process. What is the specific heat of mercury.

16. What is the specific heat of silver if 55.00 g of the metal absorbs 47.3 **calories** of heat and the temperature rises 15.0°C?

17. If a sample of chloroform is initially at 25°C, what is its final temperature it rises to if 150.0 g of chloroform absorbs 1.0 **kilojoules** of heat, and the specific heat of chloroform is 0.96 J/g°C?