## **SPECIFIC HEAT FUNSHEETS**





Energy

Q= mc∆T

Use the table below for specific heat values:

Substance	J/g°C	cal/g°C
Water	4.184	1.000
Methyl Alcohol	2.549	0.609
Ice	2.093	0.500
Steam	2.009	0.480
Benzene	1.750	0.418
Wood	1.674	0.400
Soil	1.046	0.250
Air	1.046	0.250
Aluminum	0.900	0.215
Marble	0.858	0.205
Glass	0.837	0.200
Iron/Steel	0.452	0.108
Copper	0.387	0.0924
Silver	0.236	0.0564
Mercury	0.138	0.0330
Gold	0.130	0.0310
Lead	0.128	0.0305

You must SHOW ALL YOUR WORK to receive credit. Answers must include the correct number of significant figures and units.

1. Calculate the energy released when a 4.570 g piece of hot iron cools from 1000.0 °C to 20.0 °C. Is this endothermic or exothermic?

2. Calculate the energy needed to heat 60.0 g of aluminum from 100.0 °C to 250.0 °C. Is this endothermic or exothermic?

3. Calculate the final temperature of 296 g of water, initially at 30.0 °C, if 4500.0 J are added.

4. Use the specific heat vales for lead, gold, mercury, and silver, which of these would require the smallest amount of heat to increase its temperature by 10 °C. Assume all samples have a mass of 15 g.

5. A 35.2 g sample of an unknown metal required 1251 J of energy to heat the sample by 25.0 °C. The substance was initially 0.00 °C. Calculate the specific heat capacity of this metal.

6. If 7.24 kJ is applied to a 952 g block of metal, the temperature increases by 10.7 °C. Calculate the specific heat capacity of the metal.

7. How many joules of heat are given off when 5 g of water cools from 75 °C to 25 °C?

8. How much heat is necessary to raise the temperature of 25.0 g of water from 10.0 °C to 60.0 °C?

9. What is the specific heat of a substance if 25 g of it absorbs 5000.0 J of heat when it warms from 40.0 °C to 50.0 °C?

10. How much heat is required to warm 350 g of water from 20.0  $^\circ C$  to 80.0  $^\circ C?$ 

11. What is the specific heat of iron if 300.0 g of iron required 54300 J to increase its temperature from 22.4 °C to 62.6 °C? How does your answer compare to the chart?

12. The temperature of 250.0 g of water dropped from 90.0 °C to 30.0 °C. How much energy did the water lose?