

Specific Heat
 Chem Worksheet 16.1

Name _____

Use the data in the table to answer the following questions.

Substance	Specific Heat Capacity (J/g °C)
iron	0.449 J/g °C
aluminum	0.897 J/g °C
silver	0.235 J/g °C
lead	0.129 J/g °C
copper	0.385 J/g °C
nickel	0.444 J/g °C
gold	0.129 J/g °C
zinc	0.387 J/g °C

Useful Equations	
$q = mc\Delta T$	$T_f = 100^\circ\text{C} - \Delta T$
$\Delta T = T_{\text{final}} - T_{\text{initial}}$	$T_f = T_i + \Delta T$
$1 \text{ kg} = 1000 \text{ g}$	$1 \text{ kcal} = 1000 \text{ cal}$
$1 \text{ cal} = 4.184 \text{ J}$	

- Calculate the energy required to heat a bucket of water at 10°C to boiling. The mass of the water is 75.0 g.
- A water heater warms 25.0 J of water from a temperature of 22.0°C to a temperature of 84.0°C . Determine the amount of energy (in joules) required.
- Determine the temperature change that will occur when 250.0 J of energy is applied to 20 g of gold.
- When 400 J of heat is applied to a sample of iron metal the temperature increases by 10.0°C . Determine the mass of the metal sample.
- A silver ring has a mass of 178.00 g. How many calories of heat are required to increase the temperature from 11.0°C to 100.0°C ?
- A heat energy of 140 J is applied to a sample of glass with a mass of 20.4 g. Its temperature increases from -11.0°C to 10.0°C . Calculate the specific heat of glass.
- What is the mass of copper that increases its temperature by 20.0°C when 100,000 J of energy is applied?
- How much energy (in kilocalories) is 100 kg of ice water that goes from a temperature of 200 K to a temperature of 200 K ?
- When 7000 joules of energy are applied to a 15.2 kg piece of lead metal, how much does the temperature change by?
- A 0.40 kg ingot of unknown metal is heated from 75.2°F to 100.2°F . This requires 3.0 kcal of energy. Calculate the specific heat of the metal and determine its identity.