WS – 1 Heat Calculations

1. Calculate the quantity of heat required to warm 250 mL of water from 22.0°C to 98.0°C in an electric kettle. Note: water has a density of 1 g/mL $\therefore$ 1 mL has a mass of 1 g.

2. A 35.0 g polystyrene foam cup containing coffee changes in temperature from 21.0°C to 55.0°C. Calculate the heat absorbed by the cup.

3. What mass of aluminum in a car engine will absorb 1.00×10^6 J of heat when the temperature rises from 22°C to 102°C after the car is started?

4. The liquid coolant in a car engine has a specific heat capacity of 3.88 J/g°C. Determine the mass of coolant that will absorb 1.00 MJ of heat during a temperature rise from 22°C to 102°C.

5. In a laboratory experiment, 2.00 kJ of heat flowed to a 100 g sample of a liquid solvent, causing a temperature increase from 15.40°C to 21.37°C. Calculate the specific heat capacity of the liquid solvent.