Answer on the question #68181, Chemistry / General Chemistry

Question:
If 72.4 kJ of heat is supplied to a 812 g block of metal, the temperature of the metal increases by 8.8°C. Calculate the specific heat capacity of the metal in J/g·°C.

Solution:
Heat and specific heat capacity are linked with the following equation:

$$Q = cm\Delta T = cm(T_2 - T_1),$$

where Q is the heat supplied to the system, c is the specific heat capacity of the system, m is its mass and ΔT is the change in temperature of the system.
Deriving specific heat capacity:

$$c = \frac{Q}{m\Delta T} = \frac{72.4(kJ)}{812\ (g) \cdot 8.8(°C)} = 10.13\ (J/(g \cdot °C))$$

Answer: 10.13 J/(g·°C)