How many Joules of heat are required to raise the temperature of an 8.0 kg Copper bar by 130°C? (c-Copper = 0.3851 $J/(g \times °C)$

A. 4.01×10^2 J

B. 4.01×10^3 J

C. 4.01×10^4 J

D. 4.01×10^5 J

E. 4.01×10^6 J

Solution:

$Q = cm\Delta T$, where Q – heat added, J;

c – specific heat, $J/(g \times °C)$;

ΔT – change in temperature, °C;

m – mass, g.

$Q = 0.3851 \times 8000 \times 130 = 4.01 \times 10^5 J$.

Answer: D. 4.01×10^5 J.