Answer on Question #59292, Physics / Other |

A person decides to loose weight by eating only cold food. A 100 g piece of apple pie yields 1500 kJ of energy when eaten. It its specific heat is 1.7 kJ/kg °C, how much less energy is its energy component at 5°C than at 25°C?

Solution:

The specific heat is the amount of heat per unit mass required to raise the temperature by one degree Celsius. The relationship between heat and temperature change is usually expressed in the form shown below where c is the specific heat.

$$Q = Cm\Delta T$$

where Q is the symbol for heat transfer, m is the mass of the substance, and ΔT is the change in temperature.

$$Q = 1.7 \cdot 0.1 \cdot (25 - 5) = 3.4 \text{ kJ}$$

Output: 3.4 kJ