A freezer contains 20 kilograms of food with a specific heat of \(2 \times 10^3 \frac{J}{kg \, ^{\circ}C}\). The temperature inside the freezer is initially \(-5^\circ C\). The freezer motor then operates for 10 minutes, reducing the temperature to \(-8^\circ C\).

(a) How much heat is removed from the food during this time?

(b) How much energy is delivered to the freezer motor during the 10-minute period?

(c) During this time, how much total heat is ejected into the room in which the freezer is located?

(d) Determine the temperature change in the room if the specific heat of air is \(700 \frac{J}{kg \, ^{\circ}C}\). Assume there are 80 kilograms of air in the room, the volume of the air is constant, and there is no heat loss from the room.