Homework

Problem 1

As you know, when it is really hot, people start sweating. This is our way of cooling: when the sweat evaporates, it takes a lot of energy. Typically, a human consumes about 2000 kcal of energy from food per 24 hours (1 kcal=4.2 kJ is kilo-calorie or "big" Calorie). Most of this energy ends up in the form of heat that has to be removed.

Imagine that sweating is your only way of removing this heat (say, air has the same temperature as human body and does not cool you at all). Calculate , how much sweat needs to be evaporated in 24 hours to remove all the heat generated by a person.

The latent heat of evaporation of water is 2,260 kJ/kg

Problem 2

m=1kg of ice is placed into an electric kettle that has power *P=1500W*. Initial temperature of ice is *0ºC* . How much time is needed to evaporate all the water, starting with ice?

The latent heat of melting and evaporation of water is 334 kJ/kg and 2,260 kJ/kg, respectively. Specific heat capacity of water is 4200 J/kg/K.

Problem 3: Bring your question to class!