TEK5370 - Oblig 1 - h20 - Energy Distribution and max load

1) Given the Energy usage in Norway and in households, as presented in L1
   a) Create the % of energy used in each segment (creation, industry, transport, home/buildings, others) as compared to the total energy produced
   b) Create the % of energy used in each segment (industry, transport, home/buildings, others) as compared to the total available energy

2) Giving an electrical fuse of 50 A (3-phase) in a home in Norway
   a) how much power can be used in the house, given a voltage of 230 V
   b) how much power can be used in the house, given a voltage of 400 V
   c) How much more energy can a 400 V system provide?
   d) create a drawing of a 400 V system, and a drawing of 230 V system

3) The home has a charger for an electrical car. Given the numbers of exercise 2,
   a) how much [%] of the total available energy is used given a 3.6 kW charger. How much current is used for car charging?
   b) how much [%] of the total available energy is used given a 7.2 kW charger.

4) Given that a home uses 30.000 kWh in a year, and that 60% of the energy in the home is used for electrical heating. The main driver for heating is the outside temperature. Take a temperature profile for Oslo, and calculate the amount of energy needed in each month of the year due to heating.

Discuss the results