First name_____Last name_____ ID_____

Assignment 1

1. Hot gas contained in a piston-cylinder device produces work of 500 kJ to turn a shaft and also produces work of 600 kJ to move a piston. What is the net work done by hot gas?

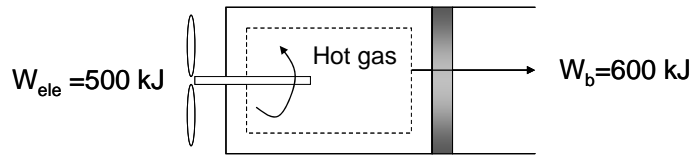W_{ele} =500 kJ | Hot gas | W_b=600 kJ

Figure of problem 1

2. A two-liter bottle of your favorite beverage has just been removed from the trunk of your car. The temperature of the beverage is 35°C, and you always drink your beverage at 10°C. Use the 1st law of thermodynamics (Conversation of energy equation) to find heat energy, which must be removed from your a liter of beverage?
   Note: Assume beverage to be an incompressible fluid and give the specific
   volume to be 0.001 m^3/kg, specific heat constant of fluid to be C = 4.18 kJ/kg·K.

System
boundary
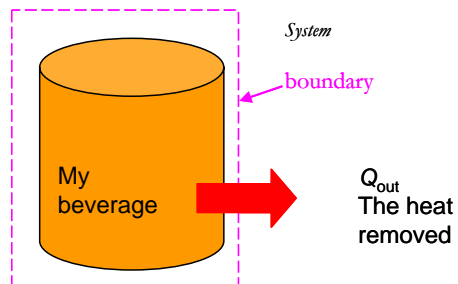My beverage
Q_{out}
The heat removed

Figure of problem 2