1. Solve both of the following problems
   1. A sample of an ideal gas has the following initial conditions V=15L, T=250K and P=1atm. It is compressed isothermally until the change in entropy is -5J/K. What are the final conditions?

b. Calculate the change in entropy when 50g of 80C water is poured into 100g of 10C water. Assume the container is insulated so that no heat is lost to the surroundings.

2. Consider a fertilized hen egg in an incubator, a constant T and P environment. In a few weeks it will hatch into a chick.

* 1. Consider the egg your thermodynamic system. Is it Open, closed or isolated?
  2. In the fertilized egg the hen provided proteins, carbohydrates and fats are formed into a highly organized chick. Does the entropy of this system increase or decrease? Does this violate the 2nd law of thermodynamics?