SUSTAIN Physics Name_____

1) I have 2 identical containers at 0°C , with one mole of gas in each. Container A has Ar (m = 40 AMU), and container B has Hydrogen (H_2,m=2 AMU). Each container has the same volume $1m^3$…. Better draw a picture for this.
   a) What is the approximate ratio of the masses of the containers $\frac{m_A}{m_B} =$
   b) What is the approximate ratio of the pressures of the containers $\frac{P_A}{P_B} =$
   c) Which container has the greater specific heat? Explain how you know.

2) For the question above (Do work on back) :
   a) Find the rms speed of the molecules in each container.
   b) Find the specific heat of each container.
   c) If I wanted to raise the temperatures to 100°C, how much energy would I have to add to each container?
   d) If instead of keeping the volume constant while heating, what if I kept the pressure constant? How would I do that? How would this affect the specific heat? **EXPLAIN** how you know this

3) For each PV diagram, an isotherm is drawn (the curved, dotted line). I start with a gas at the point indicated by the black dot. Please draw the evolution of each *compression* from $2V_O$ to V_O. Don't worry about being too precise.

4) List processes A, B, and C in terms of ΔU: From the process with the greatest *decrease* in internal energy to the process with the greatest *increase* in internal energy.

5) List processes A, B, and C in terms of Q: From the process with the most negative Q to the process with the most positive Q.

6) List processes A, B, and C in terms of work: From the process with the most negative work to the process with the most positive work.