1. What is the change in energy of a system if it does 150 J of work on the surroundings and absorbs 275 J of heat?
2. What is the change is energy of a sytem if 1.2 kJ of work is done on the system, but has lost 450 J of heat?
3. What is the work associated with a sample of gas that expands from 0.50 L to 2.25 L against a pressure of 0.75 atm? Calculate the work in in Joules.
4. What is the work associated with a sample of gas that compresses from 10.5 L to 3.2 L from a pressure of 2.5 atm? Calculate the work in Joules.
5. If 24.0 g of argon gas expands from 1.20 L to 8.85 L against a pressure of 1.20 atm and absorbs 495 J, what is the change in energy of the system?
6. If a 150.0 g of carbon dioxide compresses from 150.0 L to 48.0 L from a pressure of 5.0 atm and releases 50.2 kJ, what is the change in energy of the sample of CO2?
7. Predict the products and calculate the change in energy from the following reaction if 2.0 moles of magnesium reacts with 50.0 mL of 1.0 M HCl, the system is at 30.0°C and the pressure is 1.20 atm. Assume there is no heat absorbed or emitted.

\_\_\_\_Mg(s) + \_\_\_\_HCl(aq) 