Name _____ Date _____

Honors Physics Thermodynamics WS #3H

Period _____ Mrs. Nadworny

1st Law of Thermodynamics

Directions: Read online textbook pages 360 – 363 and 371 - 375. Solve the following problems using the GUESS method and proper significant figures. Be sure to show ALL work.

1. 24 Joules of heat are added to a gas container, and then the gas does 6 Joules of work on the walls of the container. What is the change in internal energy of the gas?

   (A) - 30 J (B) – 18 J (C) 18 J (D) 30 J

2. The internal energy of a system increased by 982 joules when it absorbed 492 joules of heat.
   a. Calculate the amount of work done.

   b. Was the work done on or by the system?

3. A gas in a cylinder was placed in a heater and gained 5500. J of heat. The cylinder increased in volume from 345 mL to 1846 mL by the gas doing 150 J work on the environment.
   a. Calculate the change in internal energy of the gas in the cylinder.

   b. Did the system increase or decrease its internal energy?

4. The change in internal energy for the combustion of 1 mole of methane gas in a cylinder is -892.4 kJ. A piston connected to the cylinder performs 492 kJ of expansion work due to the combustion.
   a. Calculate the amount of heat transferred.

   b. Was the heat gained or lost by the system?

Answers in size order: 400., 490., 5350