**Module 2 – Thermo: Quiz 3b**

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1. The maximum possible efficiency of a heat engine is determined by:
2. *its design.*
3. *the amount of heat that flows.*
4. *the maximum and minimum pressure.*
5. *the maximum and minimum temperature*
6. *the compression ratio.*
7. In a thermodynamic process, a system absorbs 450 kJ of heat and does 87 kJ of work on its surroundings. By what amount did the system’s internal energy change?
8. The first law of thermodynamics states that…. **INCLUDE AN EXPLANATION.** 
   1. *in any energy conversion you will end up with less usable energy than you started with*
   2. *the inputs and outputs of energy to a system are never equal*
   3. *energy is neither created now destroyed but may be converted from one form to another*
   4. *a carefully designed energy production facility will be self-sustaining.*

Answers:

1. The maximum possible efficiency of a heat engine is determined by:
2. *its design.*
3. *the amount of heat that flows.*
4. *the maximum and minimum pressure.*
5. *the maximum and minimum temperature*
6. *the compression ratio.*
7. Q = 450 kJ and W = -87 kJ (*negative because work is done on the surroundings!*)



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*The 1st Law of Thermo is really just a statement of the conservation of energy. Heat and Work are the two ways energy can be transferred into or out of a system.*