RAA02 – Checklist of things to know/review

**RAA02 contains all information from lectures up to and including lecture 19: Simple harmonic oscillators. Below is a short list of important concepts to understand. The goal of this list is to help you organize your thoughts as you study. This sheet does not contain everything that we covered, just the highlights to help point you in the right direction.*

- All of RAA01 checklist items.
- Heat engines and heat pumps:
  - Identify a heat engine and a heat pump based off of a diagram.
  - Definition of efficiency.
  - Steady state -> construct equation relating heat in/out and work in/out.
- Thermodynamic processes:
  - Isochoric, isobaric, isothermal, adiabatic
- Thermodynamic cycles:
  - Construct thermodynamic cycle.
  - Determine sign of ΔE^{th}, W, and Q based off of process definitions and 1^{st} law of thermodynamics.
- Fluid mechanics:
  - Pressure differences give rise to some associated force.
  - Hydrostatics:
    - Pressure at a depth
    - Buoyancy
  - Fluid dynamics
    - Continuity equation
    - Bernoulli's equation
    - Solve simultaneous equations to find relevant physical quantities.
- Oscillations:
  - Defining features of oscillations
  - SHO vs non-SHO (features of SHO)
  - Potential energy functions (stable and unstable equilibrium locations)
- Lab skills:
  - Graphing linear lines
  - Estimating uncertainty with graphs and data