# Engineering Documentation (for ED\_\_\_\_)

The primary purpose of engineering documentation is for review of your work by other engineers. If you are just calculating things for yourself, you would never go through this much detail. However, if you are going to have your calculations reviews by other engineers you want to provide more than just your calculations. You should also be capturing your assumptions, and what you plan to use to solve the problem. Showing your calculations will also let them double check your math.

Engineering documentation should be organized with sections/headings similar to what is shown below.

## Given:

This is usually the problem statement. In most homework problems, the problem statement is provided. In many real-world problems you have to come up with the problem statement. This may include a figure, data points, etc. Just document what problem it is you are trying to solve.

## Find:

What parameters are you trying to solve for in this problem? Are there any conditions on these parameters (i.e. Find the heat required assuming the process is isothermal)?

## Plan:

Document how you plan to solve this. This will include what assumptions you are going to use, along with what relationships and equations you plan to use. Can also write down range of expected answers.

## Solution:

This is just the calculation part. Especially in thermodynamics, make sure you have put units in each variable of your calculation, and tracked the units through the solution. Many great engineers have done things like missed landing on a planet due to a simple unit mistake that wasn’t accounted for.

At the end of the solution, make sure to box your final answer(s) so the engineer doesn’t have to search all over for it.

## Check:

This is where you demonstrate that your answer makes sense. You can check your answer against other accepted standards, by calculating it using a different approach, or by making assumptions to make the problem simpler (i.e. repeating the calculation using incompressible assumptions and specific heat that doesn’t vary with temperature).

## Reflection:

This isn’t always a component of engineering documentation. But it is for homework problems. This is where you can take a step back and answer questions like:

* Where else would I use a calculation like this?
* What are some practical applications of this problem?
* What additional issues should I be concerned about if this were a system I was working on?
* If I wanted higher accuracy in my calculation, what additional factors should I explore?