Homework Standards

My principal goal in reading your homework is to understand how you arrived at your solution so that I can identify any problems with logic or execution. Ideally, you use this feedback to avoid problems in subsequent homework and on the exams. For me to do this, I need to be able to efficiently figure out what you have done. You can help me by following a few standard practices in presenting your homework.

1. The standard way of presenting a calculation should be (see below):
   (a) Write out the equation you are using for the calculation symbolically
   (b) Write it out with all the numbers needed to do the calculation substituted into the equation, including the dimensional units
   (c) Show the result, with units
2. Any number used in a calculation needs to come from somewhere. This should either be from a preceding calculation, or from an outside resource (e.g., a table or an assumed number such as a guess for an ambient temperature). **Don't skip steps and don't use numbers that appear from nowhere.**
3. Keep everything neat, legible and in linear order so I don't have to struggle to understand what you are doing.
4. For spreadsheet-type repetitive calculations, you should generally work one example through independently by hand. This does two things:
   (a) It will allow you to catch a programming error if your hand and machine results don't agree
   (b) It will allow me to see what went wrong if your approach is incorrect. It's almost impossible for me to tell what is wrong if all I have is a spreadsheet solution that gives a wrong number. The hand calculation helps me troubleshoot your calculation
5. Box, circle, or otherwise highlight the final answer requested by each part of the assignment. If the answer is on a spreadsheet, clearly highlight it and transfer the result to your hand calculation sheet

The other major goal of these kinds of standards is to allow you to develop good skills at communicating your results to engineering supervisors once you leave the UW. Supervisors will want to know what kind of approach you are using so they can quickly decide whether they buy into your result. I know from experience that these kinds of skills can really help your career.

Example Calculation

Given a pipe with $D = 0.01\,m$, $V = 1\,m/s$

$\Rightarrow$ Assume $\nu = 16.7E\text{-}6\ m^2/s$ for ambient air

Calculating a Reynolds number for pipe flow:

$$Re = \frac{DV}{\nu} = \frac{0.01\,m \left| \frac{1\,m}{s} \right.}{16.7E\text{-}6\ m^2} \Rightarrow \boxed{Re = 598.8}$$