Test Two Reflection

During this test I applied the principles of conservation of energy (Bernoulli's equation) and mass to fluid flow systems, while I also computed friction losses in pipes for a variety of configurations. Both problems on this exam used both of these objectives.

My solutions for this test were very similar to the key. I was able to properly set up Bernoulli's equation and the major and minor losses for the first problem. I was able to set up an iterative solution on excel and I remembered to check for the velocity criteria. My flowrates were also very similar to the ones in the key as well. For the second problem I was able to properly solve for flowrate using Bernoulli's equation and find a proper pipe size. I chose the highest pressure rated pipe and therefore my solution was slightly different than the key. I also drew my sketch with the pump underground instead of level with the fountain. This caused me to have one less elbow than the key, but I do not believe that had much effect on the solution. I was able to properly calculate energy loss from the annulus and the pump power. If I were to take this test again, I would tell myself to read the questions carefully and underline what I need to find.

Overall I think I should receive a 12/12 on both problems. While these problems take a good deal of time, I feel that I am well equipped to solve them. My only issue is that I sometimes lose track of what I am solving for because of the time it takes to solve these problems.

One issue that I encountered was that I missed a couple key lines in a question and that caused me to do extra work. For example, I missed the sentence in the first problem that said, "Assume that the friction factor is only a function of relative roughness". Because of this I spent a good deal of time attempting the problem with too many unknowns. It was not until a couple hours later when I reread the problem that I realize that I was making the problem too difficult, and I started over. The steps that I took in this test was to just start working on Bernoulli's equation and not worry about how long the problems were. I then worked on each required answer or iterative process when needed. A new concept that I have learned is how to create an iterative process in excel. I think this will be very useful in my career as no matter where I work, I may have to set up a problem that way. Being able to choose a pipe diameter needed for a system is also very important and I believe I will also be using that in the future. I have not yet been able to apply any of these skill towards my other classes. What I improved the most on during the last month was my ability to use excel quickly and efficiently. I spent around 9 hours working on this test and I do not believe my time was used as efficiently as possible. I should have read the problems more carefully to see what was required. I also should have listed what was required on the test printout to remind myself as I was working.