

Test 1 Reflection

1) Problem 1:

a. **What course objectives are being directly assessed?**

- i. **Apply the principles of conservation of energy (Bernoulli's equation) and mass to fluid flow systems;** Bernoulli's equation is being used multiple times to determine the flow rate in this problem.
- ii. **Compute friction losses in pipes for a variety of configurations (series, parallel, network, etc.);** Friction losses are being calculated in order to determine the flow rate in this problem. This problem is also a series pipe problem.

b. **How are other course objectives being indirectly assessed?**

- i. Secondary objective that are being indirectly assessed include describing the nature of fluids and define different properties such as viscosity and pressure. These basic techniques are being used throughout these problems, especially in the Bernoulli's equations as well as the calculation of Reynolds number. Having an understanding of the properties of fluids is key to being able to solve these problems.

Test 1 Reflection

2) Problem 1: I made minor errors when assuming the K values for the valve and the reduction.

3) PROBLEM 1

Reasonable assumptions (reductions, valve, tubing diam, lengths)	0.5/10
Apply Bernoulli twice or get 2 equations from Bernoulli	1/10
Consider ALL minor losses? Handled them correctly?	2/10
Handled correctly the pipe losses?	1/10
Obtained 3 equations with 3 unknowns?	1/10
Solved system of equations correctly (Excel?)	3/10
Final results	1/10
TOTAL	10/10

Final Grade: =85.5

4) The main issue I encountered with the test was setting up the initial equations for problem 1. I did not initially follow the method outlined in class fully and tried to plug in the Q2 and Q3 equations into Q1. After taking a break and coming back I determined the correct way to solve the problem.

A concept that I learned in this test is using excel to run multiple permutations of the same problem and the importance of setting that up in an organized way. This is used all the time in the engineering field. If not with excel, then other software to run calculations.

My goal at this time is to enter in the HVAC/refrigeration field. This course is extremely important along with thermodynamics, thermal applications, and heat transfer. Designing systems for and doing iterations in pipe designs is something that I could very well do on a daily basis.

I spent about 2.5 hours on this test. I think I managed my time fairly well. I wish I had fully read the READ FIRST section as I completed both problems in the problem solving format but it seems to have worked out for problem 1.