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MET 330
Test 1 Reflection

1) How and why the test demonstrates your work toward one, or more, of the course learning objectives. Be specific on the course objectives you decide to mention.
    a. This test helped to demonstrate the underlying principles of the Bernoulli's equation. This test wanted to be sure the student understood components that make up the Bernoulli's equation.
2) How your test compares against the available solution. State the mistakes you made and what you will do next time to avoid making same mistakes. Please point out exactly where you will do next time to avoid making same mistakes. Please point out exactly where you made the mistake, say why you made the mistake, and how you should have done it. If you were taking this test again, what advice would you give yourself to ensure that you had a successful test?
    a. The solution provided showed the reference points to also include 3 and 4. I did not write 3 and 4. I still provided calculations for the suction side and pressure side of the pump. If I was taking the test again, I would add reference points 3 and 4 on the drawing and include it clearly in my calculations.
3) What your grade should be. Base it on the writing rubric provided in the test and the correctness of your solution. What are the strengths and weakness of your test?
    a. I think my grade should be a 90%. I did well on the calculations and fully understand the material. The only thing I did not get a chance to complete was the graph that plots operational cost vs. install cost. I think my test could have been better if I would have spent one more hour on it.
    b. Writing Rubric
        i. Purpose 1/10
        ii. Drawings 0.9/10
        iii. Sources 1/10
        iv. Design Considerations 1/10
        v. Data and Variables 1/10
        vi. Procedure 1/10
        vii. Calculations 0.9/10
        viii. Summary 1/10
        ix. Materials 1/10
        x. Analysis 1/10
        xi. Total 9.8/10
    c. Problem 1)
        i. Identify all unknown dimensions in drawing 1/7
        ii. Cancel the distance with water (x) 1/7
        iii. Solve for the gasoline distance 1/7
        iv. Correct excel spreadsheet 1/7
        v. Using excel, get mercury case 1/7
        vi. Why results make sense and manometer length 1/7
        vii. Final results 1/7
        viii. Total 7/7
    d. Problem 2)
        i. Select pipe diameter using 3 m/s 1/8
        ii. Compute all energy losses 1/8

iii. hA and pump 1/9
iv. Pressure at pump inlet 1/9
v. Correct excel spreadsheet 1/9
vi. Pump power for 4 other pipe sizes 0/9
vii. Installation, operating, and total cost 1/9
viii. What is the best pipe diameter 1/9
ix. Final results 1/9
x. Total 8/9

e. Final Grade: 9.8+((45*7/7)+(45*8/9))=94.8%

4) Discuss the following:
   a. What issues did you encounter in completing the test? How did you troubleshoot them?
      i. The test requires 8- 9 hours to complete
   b. What steps did you take to complete the whole test? Would you change something?
      i. I allocated plenty of time, but still needed an additional hour
   c. What new concepts have you learned?
      i. This test helped me to fully understand the friction losses in a pipe and the friction losses in the fittings and how to add them up to get the pump requirements.
   d. Where do you think engineers use those concepts?
      i. I think engineers use the concepts of friction losses at a water treatment facility.
   e. Where do you think you will be using everything you have learned?
      i. I think I will be using the knowledge about fluids in understanding moving water in a rainwater cistern I am making on the farm for the cottage.
   f. Do you think what you learn is important for your professional career?
      i. Yes, I think this will help me to be a better research and development contractor for the DOD and DARPA and NASA.
   g. How, when, where and why you might use this information or skill in the future?
      i. I would use this information for calculating the flow rate properties of a 3D printer on the surface of the moon. IN a low gravity environment the molten aluminum would no require as much power from pumps to move it due to the gravitational constant.
   h. Have you been able to apply concepts you have learned in the course to what you do at work or in other courses?
      i. Yes, I am using the concepts I have learned to develop a water-cooling system for a biomass thermos-electric generator.
   i. What areas did you feel you were most successful, or improved the most?
      i. I feel like I was most improved on was the understanding of the General energy equation.
   j. How do you see this course's content intersecting with your field or career?
      i. I see this course intersecting with my career by helping me to understand the concepts involved with pumping water. This is a important concept to know in many applications.

k. How much time did you spend on the test? How was the time organized? What would you do differently? Why?
    i. I spent 6 – 7 hours on the test. I organized the time into blocks. I would spend 8 – 9 hours on the test.