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MET 330

Test 1 Reflection

Reflection on Test 1

After reviewing the provided grading rubric, I have determined what I feel my earned grade was on Test 1:

1.	Purpose	0.5/10.0
2.	Drawings	1.0/10.0
3.	Sources	1.0/10.0
4.	Design considerations	1.0/10.0
5.	Data and variables	0.5/10.0
6.	Procedure	2.0/10.0
7.	Calculations	2.0/10.0
8.	Summary	0.5/10.0
9.	Materials	0.5/10.0
10.	Analysis	1.0/10.0
TOTAL		**10.0/10.0**

PROBLEM 1)

1.	Identify all unknown dimensions in drawing	1/7 out of 1/7
2.	Cancel the distance with water (x)	1/7 out of 1/7
3.	Solve for the gasoline distance (y)	1/7 out of 1/7
4.	Correct excel spreadsheet	1/7 out of 1/7
5.	Using excel, get mercury case	1/7 out of 1/7
6.	Why results make sense and manometer length	.5/7 out of 1/7
7.	Final results	1/7 out of 1/7
TOTAL		**6.5/7 out of 7/7**

PROBLEM 2)

1.	Select pipe diameter using 3 m/s	1/9 out of 1/9
2.	Compute all energy losses	.5/9 out of 1/9
3.	h_A and pump power	.5/9 out of 1/9
4.	Pressure at pump inlet	1/9 out of 1/9
5.	Correct excel spreadsheet	.5/9 out of 1/9
6.	Pump power for 4 other pipe sizes	.5/9 out of 1/9
7.	Installation, operating, and total costs	.5/9 out of 1/9
8.	What is the best pipe diameter?	1/9 out of 1/9
9.	Final results	1/9 out of 1/9
TOTAL		**6.5/9** out of 9/9

FINAL GRADE:

10.0 + (80/2)*(6.5/7+6.5/9) = 76

Test 1 was rather straight forward and while most of my test was satisfactory there are a few key mistakes regarding my procedure which negatively effected the values I obtained. To overlay my mistakes, I will compare my results to the test solution beginning with problem one. In problem one, I was successful in each procedural step as I defined the unknown height and solved for h2. My answer was satisfactory as it was very close to the solution. I concluded the change in height to be .85 feet whereas the solution found it to be .92 feet. As for the mercury measurement shown on my excel sheet, it also conformed with the solution provided. However, my "minimum height" calculation seemed to be slightly off, as my provided answer was 12.85 feet, and the solution displayed a height of about 12 feet.

Although problem 1 was executed nearly perfect, problem 2 was not quite as straight forward. After reviewing the solution, it's evident there was a major misunderstanding regarding my procedure. Since I mistook the problem statement and assumed I was accounting for all the pipe in the figure, some of my values were skewed due to this mistake. However, other than this one mistake, the actual calculations obtained proved to follow the solutions procedure almost perfectly. Therefore, for what I was "trying to calculate", my answers were correct. With, my values for total HL, PA and HA were directly affected by this misunderstanding. If I could redo the test, or give myself advice prior to, I would emphasize the portion of the system I was expected to redesign. I have accounted for this compounding error in my test grading by giving myself half credit for all the values that were skewed by my initial mistake. This dropped my grade for problem 2 to a 6.5/9 unfortunately.

While taking the test I focused on one problem at a time and tried my best to fully understand the problem before I blindly threw equations at it. This proved beneficial as it gave me time to organize my thoughts and ideas. Once I fully completed problem one, I applied the same method to problem two and the excel sheets required. The largest issue I encountered while taking the test was fully understanding problem two. Although we had discussed Bernoulli's equation in class, I felt unprepared to tackle a system problem of this magnitude. After I overcame the feeling of being overwhelmed, I tried to break the problem into small manageable steps. This proved to be very effective, yet I still felt unsure of what exactly the problem was asking for. Most notably the mistake I previously mentioned concerning which section of the system I was supposed to isolate and focus on.

In terms of new concepts learned, I was forced to teach myself how to use excel, which I found to be very useful after a few hours of struggling with it. I think that was a very valuable lesson since I know it will be essential in my work as an engineer so I'm grateful for that. One fluid mechanics concept I learned was the calculations regarding pump power and pipe size. I found this oddly fun in that I felt I was learning along the way (excel also greatly helped during these steps). I know this knowledge will be extremely important in my professional career and therefore it seemed less like work and more like a fun challenge. I think I will directly apply the knowledge gained from this test to my professional career. As I'm very interested in HVAC systems, I know the importance of calculating and designing systems to meet the needs of a pump or unit.

I feel I excelled in this test everywhere except for understanding the system parameters (the pump portion). I think were I improved on this test was in my organizational skills regarding units, figures, and most notably using excel. In terms of time spent on the test, I easily spent more than twenty hours on it collectively. As mentioned, I split the workload between the two problems and completed them at different stages. However, part 2 certainly took most of my time both for calculating and conceptualizing. I think I managed my time well, but I certainly wasted a lot of time learning excel, looking through the textbook for references and property values, and rewriting my work into the required format. Knowing what I know now, I would have all my values prepared before starting my calculations, would start my work in the predetermined format, and would allow ample time for the conceptualizing and calculating portions. I will also save much time in the future using my newly learned excel skills.