

## Test 2 Homework Reflection

In Homework (HW) 2.1, I gained knowledge of how to calculate forces due to static fluids using the equation  $F=p/A$ . This equation can be used to calculate pressure as long as the fluid is not moving, by using the  $\gamma h$  equation. However, if the fluid is moving, Bernoulli's equation must be used to calculate the pressure. I also learned how to calculate the forces of a moving fluid by calculating the centroid of the area and the center point where the force is concentrated. If the force being calculated is hinged, moment needs to be factored in. Additionally, I learned how to determine the buoyancy force and determine whether a vessel would be stable in water.

In HW 2.2, I learned how to calculate drag and lift force. The drag or lift coefficient may or may not depend on the Reynolds number, depending on the object and the direction of the force of the fluid flowing across the object. Once the coefficient is calculated, the equation  $F_d=C_d(\rho V^2/2)A$  can be used to calculate the force. If the velocity is unknown, a trial and error process can be used.

In HW 2.3, I gained knowledge of how to calculate flow rate using a flow rate meter. I also learned how to calculate the forces of a moving fluid by pinpointing all the forces of the fluid and using the equation  $\dot{F}=pQ(V_z-V_s)$ . This information is valuable for understanding the behavior of fluids and how they affect various objects and vessels.