Name: _____ Section #: ____ Date: _____

Archimedes' Principle

Part 1: Archimedes' Principle

Prediction

In the first experiment to test Archimedes' Principle, explain what will happen to the weight of the object submerged in fluid. What will the buoyant force be equal to? Write the major points of your group discussion.

Run Part 1 of the experiment. Be sure to save a screenshot of your graph with all parameters clearly visible. Have one of your group members log into their WebAssign account. Complete all required calculations there before you proceed to Part 2.

After the Experiment

Write the major points of your discussion about major discrepancies and similarities between your prediction and actual results.

Part 2: Determine the density of the golf ball.

Prediction

Can the density of a material be determined if the buoyant force is known? Explain how.

Run Part 2 of the experiment. Be sure to save a screenshot of your graph with all parameters clearly visible. Complete all required calculations in the Inlab before you proceed to Part 3.

After the Experiment

Write the major points of your discussion about major discrepancies and similarities between your prediction and actual results.

Part 3: What is the mass of the system?

Prediction

Draw a force diagram of the forces acting on the object hanging on the string, completely submerged in the water without touching the floor. The container with the water and submerged object sits on the balance. Consider that there is no water overflow from the beaker. What is your predicted mass of the system (beaker + submerged object + water) in this situation? Explain your answer.

Run Part 3 of the experiment. Complete all required calculations in the Inlab before you proceed.

After the Experiment

Write the major points of your discussion about major discrepancies and similarities between your prediction and actual results.

Data Analysis. Calculations.

Show all your work (**equations and calculations**) that you did to get the answers submitted in each part of the Inlab.

Part 1: Archimedes' Principle

Calculate the weight of the displaced water, equation 6, the magnitude of the buoyant force, first using equation 5 and then using equation 9, and then find the percentage differences between the weight of the displaced water and the magnitude of the buoyant force in each case.

Part 2: Determine the density of the golf ball.

Calculate the buoyant force acting on the golf ball.

Calculate the volume of the golf ball.

Calculate the density of the golf ball.

Calculate the percent discrepancy between the measured density of the golf ball and accepted density of the golf ball.

Part 3: What is the mass of the system?

Calculate the mass of the system (beaker + submerged object + water). The object hanging on the string is completely submerged in the water without touching the floor.

Have your TA sign this worksheet below and then upload it to the Inlab.

TA Signature: _____