

AP Physics Lab

Lab 9-A: Buoyant Force

Equipment:

- aquarium of water
- baseball
- plastic meter stick
- stopwatch
- electronic balance

Purpose:

- Calculate the buoyant force acting on an object accelerating through water.

Procedures:

- Measure the mass of the baseball. (*Hecht baseball = 141.8 g, Twins baseball = 154.3 g*)
- Hold the baseball below the surface of the water. Measure the depth of the baseball.
- Release the baseball and measure the time required for it to float back to the surface.

Report:

1. Calculate the acceleration of the baseball as it moves through the water.
2. Determine the buoyant force on the baseball while it is submerged.
Draw a free body diagram of the baseball while it is submerged.
3. Draw a free body diagram of the baseball while it is floating on the surface of the water.