

AP Physics Lab

Lab 13-A: *Buoyant Force on an Object on a Spring*

Equipment:

- 250 mL graduated cylinders
- $\frac{1}{2}$ meter sticks
- Hooke's Law springs
- 50 g, 100 g, or 200 g mass

Purpose:

- Calculate the spring constant of a spring through two different situations.

Procedures:

- Choose a suitable mass for the spring you are given.
- Attach the mass to the spring and measure all quantities needed to calculate the spring constant of the spring.
- Attach the mass to the spring and submerge it in water in the graduated cylinder. Measure all quantities needed to calculate the spring constant of the spring.

Report:

1. Calculate the spring constant of the spring with the object attached to the spring, but not submerged. Draw a FBD showing all force types and amounts for this situation.
2. Calculate the spring constant of the spring with the object attached to the spring and submerged in water. Draw a FBD showing all force types and amounts for this situation.
3. Should you obtain approximately the same value for the spring constant in the two situations? Why or why not?