Date

Name



Density is the mass per unit of volume. Buoyancy involves mass and volume. The buoyant force is the upward push exerted on an object by a liquid. When the mass of the displaced liquid is equal to the mass of the object, the object floats.

Strategy

You will determine the densities of freshwater, salt water, and an egg. You will deduce the relationship between density and buoyancy.



balance

beakers (250-mL and 2000-mL, heat proof) egg graduated cylinder (50-mL)

Procedure

- 1. Using the balance, measure out 25 grams of salt.
- 2. Heat 1 liter of water in the pan. Dissolve the salt in the water.
- 3. Pour the salt water into the 2000-mL beaker and let it cool to room temperature.
- 4. Determine the mass of 10 mL of the salt water. Record it in the table. Pour the salt water back into the beaker.
- 5. Determine the mass of 10 mL of freshwater at room temperature. Record it in the table.

heat source	spoon
measuring tray	stirring rod
pan	water
salt	

6. Determine the mass of the egg. Record it in the table.

Class

- 7. Determine the volume of the egg. Record it in the table.
- 8. Carefully pour 250 mL of freshwater on top of the cool salt water. Pour the water down the side of the beaker using the stirring rod. Do not mix.
- 9. Slip the egg into the beaker using the spoon. Observe and record its position.
- 10. Stir the solution, and observe what happens to the egg.

Data and Observations

	Mass (g)	Volume (cm ³)	Density (g/cm ³)
1. salt water		10	
2. freshwater		10	
3. egg			

Hands-On Activities

Date

Laboratory Activity 2 (continued)

Questions and Conclusions

1. Calculate the density of the freshwater, salt water, and egg. Show your work.

Record the densities in the table under Data and Observations.

- 2. What happened to the egg when you added it to the separated freshwater and salt water?
- **3.** Compare the density of the egg to that of the freshwater and the salt water.
- 4. What happened to the egg after you mixed the salt water and freshwater together?
- 5. State the relationship between density and buoyancy.
- 6. Explain, in terms of density, why a person is able to float in water.
- 7. Is it easier for a person to float in seawater or in freshwater? Why?
- **8.** Explain how a balloon inflated with helium floats in the air.

Strategy Check

- _____ Can you determine densities experimentally?
 - _____ Can you state the relationship between density and buoyancy?