

**Procedure**

1. Run about one inch of water in a sink. Lay the pipet (hydrometer) in the water and squeeze the bulb to bring in some water. Set it upright and check on the level of water. Adjust the water so that the bulb is full of water and the stem is full of air.

2. Put about 70 mL of water in the 100 mL graduated cylinder. Place the pipet with the bulb down into the cylinder. The pipet should float with the bulb about 5.5 cm below the water line and the tip about 12.5 cm above the water line. If the pipet tip is not 12.5 cm above the water line then adjust the amount of water in the pipet bulb. See Figure 30-1. **Note: The 12.5 cm distance shown in Figure 30-1 is only for the tap water.**

3. Tap the side of the cylinder to make certain that the hydrometer is not sticking to the side. Measure the distance between the water line and the tip of the pipet stem (it should be 12.5 cm), and record in Table 2. This is a measure of the density of water with zero percent salt.

4. Keeping the amount of water in the hydrometer the same, remove the hydrometer, rinse and dry the outside, and stand it up vertically until the next use.

5. Empty the graduated cylinder, rinse it well, and shake out the water.

7. Put 70.0 mL of water into the beaker, add 1 cc of salt using the 1 cc measuring scoop. Mix the water to dissolve the salt. This is a 2.0% salt solution.

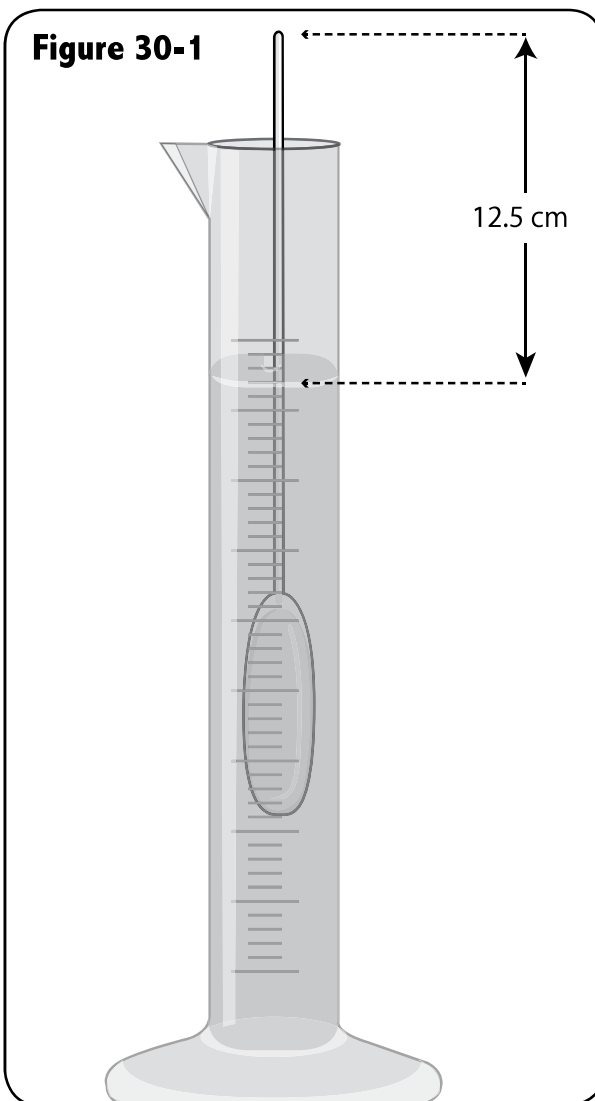
8. Pour the 70 mL of the salt solution into the 100 mL graduated cylinder. Place the hydrometer into the cylinder. Measure the distance between the water line and the tip of the pipet stem and record.

9. Repeat procedures 5-8, except with the water and salt amounts in Table 1.

10. Using the data from Table 2, plot a graph of hydrometer height in centimeters (vertical axis) vs. percentage of salt in water (horizontal axis). Connect the dots with a straight line.

**Table 1**

Water	Salt	% of Salt	Density of Salt water
70.0 mL	none	0.0	1.000 g/mL
70.0 mL	1 cc	2.0	1.020 g/mL
70.0 mL	2 cc	4.0	1.040 g/mL
70.0 mL	3 cc	6.0	1.060 g/mL



**Lab 30****Questions for Ocean Water, Salinity, and Density****Table 2**

<b>Percentage of Salt (%)</b>	<b>Density (hydrometer height) (cm)</b>
<b>0.0</b>	
<b>2.0</b>	
<b>4.0</b>	
<b>6.0</b>	

1. How does increasing the salt concentration in the water affect the height of the hydrometer?
2. From your answer to Question 1, how does the amount of salt affect the density of water?
3. Did you ever swim in ocean (salt) water? Compare swimming in fresh water and in salt water.
4. Is a given boat able to carry a larger load (more mass) in the ocean or a fresh water lake? Explain your answer.
5. From past experience, compare two identical balloons, one filled with air, the other filled to the same size with helium. Do they behave the same? Why or why not?