Measuring density – student sheet

In this experiment you will be measuring the mass and volume of seawater and tap water and then using your data to determine the density. (Density = mass / volume)

Procedure

1. Place the measuring cylinder on the balance pan and tare the balance.
2. Carefully add 0.5 cm^3 of tap water dropwise to the measuring cylinder. Record in a table the volume of water added and the mass.
3. Add drops of tap water until the volume is 1.0 cm^3. Record the new mass.
4. Add water until the volume is 1.5 cm^3 and record the mass.
5. Continue in this manner at 0.5 cm^3 intervals up to 5.0 cm^3 (If you cannot tare the balance, subtract the mass of the measuring cylinder each time).
6. Repeat the whole process using seawater.

Questions

Make a table of your results (as shown below).

Seawater			Tap water		
Vol (cm3)	Mass (g)	Density (g cm-3)	Vol (cm3)	Mass (g)	Density (g cm-3)

On a piece of graph paper plot the volume against the mass for both tap water and seawater and draw a best line fit through each set of points. Measure the slope of these lines.

1. What do you notice on measuring the slope of the lines on your graph?
2. What are the advantages of showing your results graphically rather than just in a table?
3. On a piece of graph paper, plot the volume against the mass for both tap water and seawater and draw a line of best fit through each set of points. Measure the slope of these lines.
4. (You may wish to use a spreadsheet package to do the calculations.)

Health, safety and technical notes

There are no significant hazards associated with this experiment.