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Ocean Depth and Pressure

The following images show the side and top view of three Styrofoam cups that were sent out to the Gulf of Mexico. The first cup was submerged at the ocean's surface or sea level, the second was submerged to 198 meters depth, and the third was submerged to 2,500 meters depth. All three cups started out the same size.

Using a ruler, measure, in centimeters, the height and top diameter (at the widest point) of each cup from the pictures and record your data in the Measurements table on the last page. Masses and Volumes for each cup have been provided for you.

After measuring the cups, you will be able to calculate how much smaller the 198 m and 2500 m cups are from the cup that was only submerged at sea level. The results will let you know if depth (and pressure) is related to the amount of change seen in the cups.

Sea Level Cup



198 Meter Depth Cup



2500 Meter Depth Cup



Record your cup measurements in the following table.

Measurements	Cup Height (centimeters)	Top Diameter (centimeters)	Mass (grams)	Volume (milliliters)
Sea Level Cup			4.5 g	500 mL
198 Meter Cup			4.7 g	225 mL
2500 Meter Cup			4.6 g	125 mL

Calculate the change in each cup measurement between sea level and each depth:

Subtract the measurements of the 198m and the 2500 m cup from the original size (Sea Level Cup).

Sea Level Cup – Depth Cup = Change in Measurement

Difference	Cup Height (centimeters)	Top Diameter (centimeters)	Mass (grams)	Volume (milliliters)
198 Meter Cup				
2500 Meter Cup				

Calculate the percent change in each cup measurement for each depth: Using the measurements you found in the last step you can find the percent change. Divide the amount of change by the original size and then multiply by 100.

Change in Measurement ÷ Sea Level Cup Measurement x 100 = Percent Change

Percent Change	Cup Height (centimeters)	Top Diameter (centimeters)	Mass (grams)	Volume (milliliters)
198 Meter Cup				
2500 Meter Cup				