Review formulas for calculating the volume of a variety of geometric objects such as cylinders, spheres, cones, rectangles, pyramids and any other shape you may be testing.

Secure or make the geometric shapes you are going to test. Using a ruler, measure the dimensions necessary for calculating volume. Use small units of measurement to reduce your greatest possible error. Record the data. Push the object into water and measure the volume of water displaced. Record the data. Compare the results for displacement of water with the volume based on formula.

Make a table of your data including information such as shape, radius, height, length, formula, volume by formula, and volume by displacement.

Show your table to the class explaining the relationship between displacement and the formula. Account for possible differences in volumes of the same object using the two processes.

NOTE: If you plan to do the hyperextension, do it before you make the presentation as this will skew the results.

Extension: Research Archimedes' experiment with the gold crown.

Experiment with the concept of displacement using equivalent weights of different materials, for example 1 oz of wood and 1 oz of plastic. Repeat using different materials. Make a table listing the substances in order of density.

Share your findings with the class and relate the story of Archimedes.

Hyperextension: Create a problem for the class to solve using three or more objects. These should all be disguised to look the same or all to look different, maybe painted or hidden in opaque plastic bags. The objects should have identical weights. At least two of the objects should be of the same material. The solution to the problem is finding the matching materials, stating the method used.

Set your problem up for the class to work.