

Integrated Instructions

Aim: To investigate density of regularly and irregularly shaped solids and liquids using a range of appropriate apparatus.

Part 1 (regular)

1. Use the ruler to measure the length, width, and height of each of your selected regular shaped objects. Record this data in your results table.



2. Calculate the volume of each object and record this in your results table also.



4. Calculate and then record the density of the objects using the equation: $\text{density} = \text{mass} / \text{volume}$.

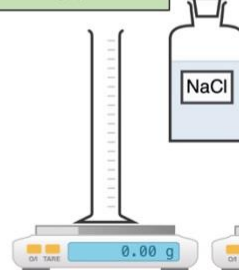
3. Use the digital mass balance to measure the mass of each of your objects. Record this in your results table.



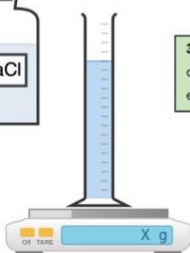
5. Convert your density measurements into the standard units of kg/m^3 .

Part 3 (liquid)

1. Use the digital mass balance to measure the mass of an empty 100 ml measuring cylinder.



2. Add 100 ml of salt solution to the measuring cylinder and record the exact volume in your results table. The mass of the liquid is the mass displayed on the balance minus the mass of the empty measuring cylinder.



3. Calculate and then record the density of the liquid using the equation: $\text{density} = \text{mass} / \text{volume}$.

4. Convert your density measurements into the standard units of kg/m^3 .

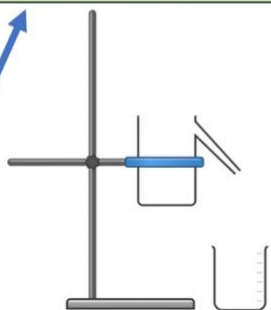
Part 2 (irregular)

1. Use the digital mass balance to measure the mass of one of the irregular shaped objects. Record this mass in your table.



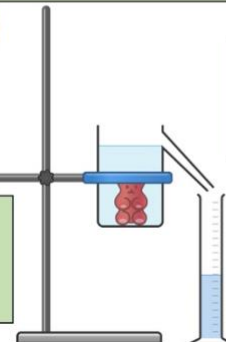
2. Secure the displacement can in the clamp stand so it is well-supported, and the spout is just higher than the top of your measuring cylinder. Select a measuring cylinder of an appropriate size for the object you will be measuring.

3. Place an empty beaker beneath the spout of the displacement can. Carefully fill the displacement can with water until water leaks from the spout into the beaker. Wait until the spout stops dripping before proceeding to the next step.



5. Slowly and carefully lower the irregular shaped object into the displacement can. You may wish to use a short length of cotton to do this to avoid having to drop the object and cause a splash.

4. Remove the beaker and place your measuring cylinder beneath the spout.



6. Measure and record the volume of water displaced from the can to the measuring cylinder. This will be equal to the volume of the object.

7. Calculate and record the density of the irregular shaped object.