

Dynamics and Statics

What does the scales say?

Background

Archimedes noted that when objects are immersed in water they experience an upthrust or buoyancy force. Will the kitchen scales in the picture detect this upthrust?

You will need...

- ✓ kitchen scales,
- ✓ a large jug half filled with water and
- ✓ a litre bottle of water.

Follow these steps

1. Place the jug which is half full of water on the scales. Note the reading on the scales.
2. Hold the bottle of water inside the jug in such a way as not to touch any part of the jug.
3. Lower the sealed bottle into the water until about half of bottle is under water.
4. Observe the reading on the scales



So what happened?

The water level in the jug rose, and the reading on the scales increased.

What next?

Draw a diagram of the forces acting on the bottle and a separate diagram of the forces acting on the scales.