ARCHIMEDES' PRINCIPLE

MED 17.09



Material:

Item-no.	Qty.	Description
DS090-3K	1	Claw base "Sepp", 260 x 220 mm
DS201-75	1	Support rod, round, L=750 mm, D=12 mm
DS095-3K	1	Bosshead cross-pattern, demo 03
DM725-ND	1	Newtonmeter "inno" 20 N / 2000 g
P3120-5B	1	S-shaped assembly platform
C7235-2B	1	Lab-jack, 150x150 mm
DM110-1A	1	Overflow beaker 600 ml
C1580-1B	1	Measuring cylinder 100 ml, glass
DM112-8A	1	Bucket and cylinder

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Purpose
Demonstrating that Buoyancy equals the weight of the amount of liquid displaced

Preparation
- the 750 mm support rod is clamped into the claw base
- fix the bosshead cross-pattern on the support rod (at a height of 35 cm)
- the lab-jack is placed in front of the claw base
- next to the lab-jack the measuring cylinder is placed
- the overflow vessel is placed on the lab-jack so that the end of the outlet pipe is centre above the opening of the graduated cylinder
- fill the overflow beaker until the water runs over
- remove the water that was transferred to the measuring cylinder
- place the Newtonmeter on the S-shaped assembly platform
- the weighing bar (hook points downwards) is clamped to the bosshead cross-pattern





Experiment 1
Turn in the Newtonmeter and select the measuring range „N".
The bucket and the cylinder are hung on the hook of the weighing bar.
Afterwards we tare the Newtonmeter (set to 0).

Loosen the bosshead and lower the weighing bar with the bucket and cylinder attached until the cylinder is completely immersed in water.

Which value does the Newtonmeter show?

The buoyancy is ..... N

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Experiment 2
We fill the water from the graduated cylinder into the bucket.

Which value does the Newtonmeter show now?

Result
When a body is immersed in liquid, buoyancy is created.
If the water displaced by the immersed body is filled into the attached measuring cylinder, the initial display is restored

Note
Stevin's explanation: The weight of the liquid that was previously in the place of the immersed body was held - because the liquid was at rest. The same force works even when the body is in the place of the liquid.

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