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Laboratory task – physics – report

2.3 Archimedes´ principle

Name:	Class:
Date:	Evaluation:
Cooperated:	

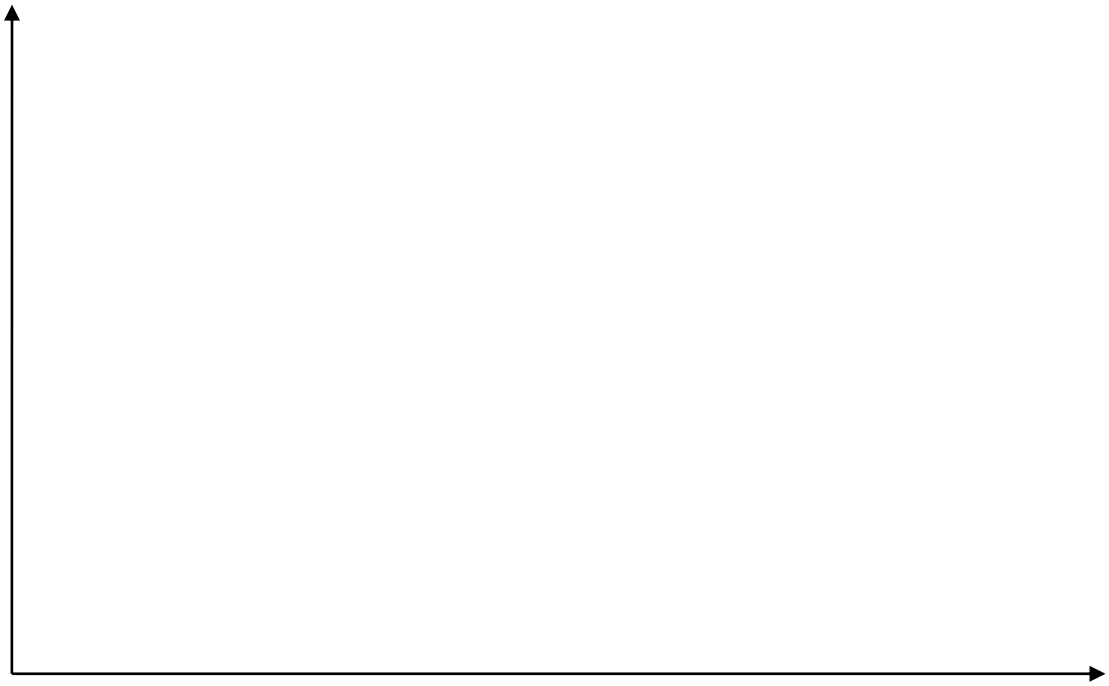
TASK

Verify the validity of the formula (for calculation of buoyant force): $F_{\text{vz}} = V \cdot \rho_k \cdot g$

Where:
V …….... volume of the submerged part of the body
ρ_k …… density of the fluid
g ……gravitational acceleration

MAESUREMENT:

1) Graphs of the resultant- time relationship. (The weight is, at first in the air and then it is fluently immersed into the water, so it is fully submerged, at the end let the weight be submerged for a while).



2) Measurements of the buoyant force for the weights of the same volume but of different material.

Object - weight	$\frac{F_G}{\mathrm{N}}$	$\frac{F}{\mathrm{N}}$	$\frac{F_{vz} = F_G - F}{\mathrm{N}}$

Average of the weights $d=$
Height of the weights $v=$

Volume of the weights $V = \pi \cdot \left(\frac{d}{2}\right)^2 \cdot v$

Buoyant force for all the weights $F_{\mathrm{vz}} = V \cdot \rho_k \cdot g =$

$F_{\mathrm{vz}} =$

3) Measurements of the buoyant force for the same weight immersed into water and into ethanol.

liquid	$\frac{F_G}{\mathrm{N}}$	$\frac{F}{\mathrm{N}}$	$\frac{F_{vz} = F_G - F}{\mathrm{N}}$
water			
ethanol			

Volume of the weights: V=

Buoyant force for water: $F_{\mathrm{vz}} = V \cdot \rho_k \cdot g =$

$F_{\mathrm{vz}} =$

Buoyant force for ethanol: $F_{\mathrm{vz}} = V \cdot \rho_k \cdot g =$

$F_{\mathrm{vz}} =$

4) Measurement of buoyant force for the object set by 4 steel weights (each of 100g) hanged one under each other.

Number of weights	$\frac{F_G}{\mathrm{N}}$	$\frac{F}{\mathrm{N}}$	$\frac{F_{vz} = F_G - F}{\mathrm{N}}$	$\frac{F_{vz} = V \cdot \rho_k \cdot g}{\mathrm{N}}$
0				
1				
2				
3				
4				

Average of one weight $d =$

Height of one weight $v =$

Volume of the weights: $V = \pi \cdot \left(\frac{d}{2}\right)^2 \cdot v =$

CONLCLUSION

Sum up the measurements, draw a conclusion.