

PARALLELOGRAM LAW OF FORCES II

AIM

- 1) To find the relative density of the given body using parallelogram law of vectors.

APPARATUS



Gravesand's apparatus, slotted weights, given body, water, glass plates, paper, pins etc.

THEORY

If **P** and **Q** are the known weights and **W** is the weight of the unknown body, which are in equilibrium and acting as co-planar concurrent forces, then according to the Parallelogram law of vectors

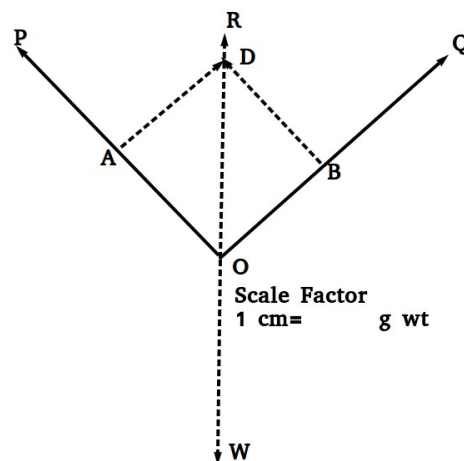
$$\mathbf{W} = \text{Diagonal} \times \text{Scale Factor}$$

Where the diagonal vector represents the resultant of the forces P and Q

$$\text{Relative density of solid} = \frac{\text{Weight of solid in air}}{\text{Loss of Weight in water}}$$

$$= \frac{W_1}{W_1 - W_2} \text{ where } W_1 \text{ is the}$$

weight of the body in air and W_2 is that in water



OBSERVATIONS

Scale Factor 1 cm = g wt

Body in	Trial No	P g wt	Q g wt	OA cm	OB cm	Length of the Diagonal (OD) cm	Mean Weight g wt
Air	1						$W_1 =$
	2						
	3						
	4						
Water	1						$W_2 =$
	2						
	3						
	4						

$$\text{Relative Density of the given body} = \frac{W_1}{W_1 - W_2} = \quad =$$

RESULT:

$$\text{Relative Density of the given body} =$$