

GIRLS' HIGH SCHOOL AND COLLEGE, PRAYAGRAJ

SESSION: 2020-2021

CLASS-X A, B, C, D, E, F

SUBJECT: PHYSICS PRACTICAL

INSTRUCTIONS: 1) Parents are expected to ensure that student must write all experiments in Guided Physics Practical Workbook (D.N. Publications).

2) Observations and reading will be done, when the school will re-open.

3) Well labelled diagram will be made on the left page only.

4) Each experiment should be written on a separate page.

EXPERIMENT No.1

AIM: To verify the principle of moments.

APPARATUS USED: Metallic stand, metre ruler, weights and string.

PRINCIPLE: In equilibrium, the sum of anticlockwise moments is equal to the sum of clockwise moments.

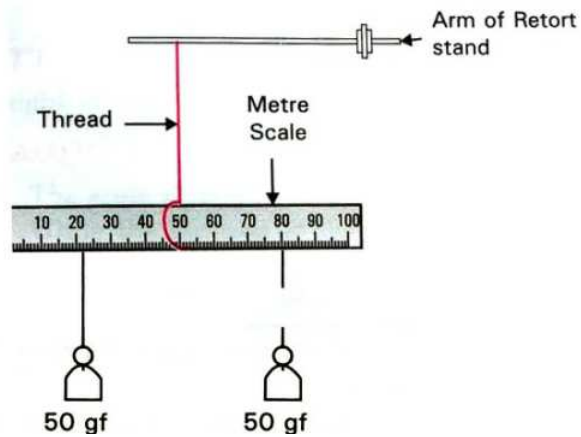
OBSERVATIONS AND CALCULATIONS: Position of centre of gravity of the metre ruler $G =$ _____cm

Weight $W_1 =$ _____gf

Weight $W_2 =$ _____gf

Sl.No.	X (in cm from G)	Y (in cm from G)	$W_1 \times X$ (gf-cm)	$W_2 \times Y$ (gf-cm)
1				
2				
3				
4				

RESULT: Since $W_1 \times X = W_2 \times Y$ (approximately equal), it verify the principle of moments.



EXPERIMENT No.2

AIM: To determine the weight of the given metre ruler using principle of moments.

APPARATUS REQUIRED: Metre ruler, string, known weight, metallic stand.

PRINCIPLE : According to the principle of moments,

Under equilibrium conditions, the sum of all anticlockwise moments= the sum of all clockwise moments.

OBSERVATIONS AND CALCULATIONS:

Least count of the metre ruler= _____cm

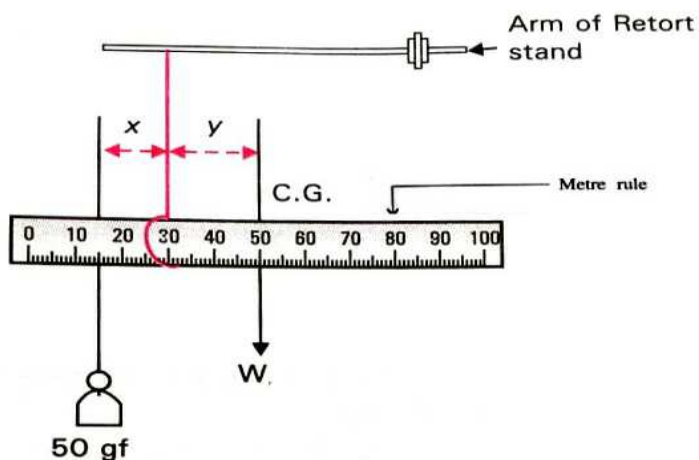
Position of centre of gravity of the metre ruler=_____cm

Known weight W_1 =_____gf

Sl.No.	Distance of weight from suspension =X(cm)	Distance of suspension from center of gravity=Y(cm)	$W=W_1*(X/Y)$ (gf)
1			
2			
3			
4			

Average weight of the metre ruler= (...+....+....+....)/4 gf

RESULT: The weight of the given metre ruler as determined from the experiment=_____g.



EXPERIMENT No.3

AIM: To determine the unknown weight of a given bob using principle of moments.

APPARATUS USED: Metre ruler, metallic stand, string, known weight and unknown weight.

PRINCIPLE : According to the principle of moments,

Under equilibrium condition, the sum of all anticlockwise moments is equal the sum of all clockwise moments.

OBSERVATIONS AND CALCULATIONS:

Least count of the metre ruler= _____cm

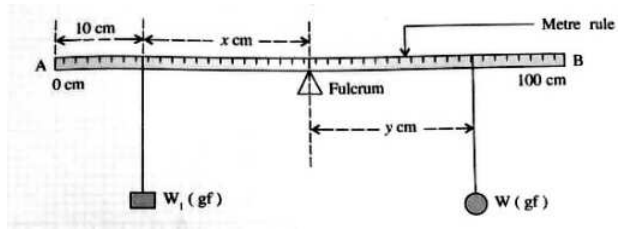
Known weight W_1 = _____gf

Position of centre of gravity of the metre ruler (CG)= _____cm.

Sl.No.	Distance of known weight from CG=X(cm)	Distance of unknown weight from CG= Y (cm)	$W=W_1*(X/Y)$ (gf)
1			
2			
3			
4			

Average weight= $(\dots+\dots+\dots+\dots)/4$ gf.

RESULT: The unknown weight of the given bob as obtained from the above experiment=_____gf.



EXPERIMENT No.4

AIM: To determine the relative density of brass bob using principle of moments.

APPARATUS USED: Metre ruler, metallic stand, string, known weight, brass bob and beaker filled with water.

THEORY: The relative density of the substance is defined as the ratio of its density to the density of water at 4 °C i.e. the ratio of mass of the substance to the mass of an equal volume of water or weight of substance to the weight of water displaced by the substance.

R.D. = weight of the substance/weight of water displaced by the substance

$$\text{R.D.} = W/(W - W')$$

where **W** = weight of the substance in air, and

W' = weight of substance in water.

$$\text{Since } W = (W_1 \cdot X_1)/Y$$

$$W' = (W_1 \cdot X_2)/Y$$

where **X1** = distance of known weight from the centre of gravity of metre ruler when metallic bob is in air,

X2 = distance of known weight from the centre of gravity of metre ruler when metallic bob is in water, and

Y = distance of metallic bob from the centre of gravity of metre ruler.

$$\text{Thus, R.D.} = X_1/(X_1 - X_2)$$

OBSERVATIONS AND CALCULATIONS:

Least count of the metre ruler= _____cm

Known weight W_1 = _____gf

Position of centre of gravity of the metre ruler (CG)=_____cm.

Sl. No.	Y (in cm)	X1 (in cm)	X2 (in cm)	R.D.= $X1/(X1 - X2)$
1				
2				
3				
4				

RESULT: The relative density of brass bob from above experiment = _____

