

# [Moment and equilibrium - lab report example](https://assignbuster.com/moment-and-equilibrium-lab-report-example/)

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## Moment and Equilibrium

Moment and Equilibrium Introduction An object is in balance when it has no trend to turn or change, that is no conversion and no spinning. When a figure is in equilibrium the anticlockwise moments round a point is equivalent and contradictory to the totality of the anticlockwise moments about that point and likewise the resulting force is zero (Lee, 2010). This is presented by the demonstrations chosen some loaded beams. Moment of force, therefore, is that force that is due to the revolving effect, for example when a force is subjected to one end of a body whose other end is attached to a pivot, that pulls or push will tend to revolve the object about the pivot thus that turning effect obtained is the moment of force.
Aim
The aim of the experiment is to verify the equilibrium of force on a beam experimentally and analytically using the concepts and equilibrium and finding the reactions of the left and right weights (Lee, 2010).

Apparatus
Stand, boss and clamp
Metre rule
Loop of thread
Mass hanger and some slotted masses
Method
The boss, stand and clamp is set so that the bar of the clamp is straight and its tallness above the seat is few centimetres further than the length of the mass hanger
The thread loop is attached over the zero mark of the metre rule
The mass is suspended from the lowest of the loop underneath the metre rule
The loop is slided to about 1cm mark of the metre rule
The metre rule is relocated and the suspended masses so that it equilibriums horizontally on the slab of the clamp stand
The experiment is repeated three times to get more results
Results
Discussion
From, 0= P1X1 +P2X2 + P3X3 – RBL, that is in case II
0= 20 x 18 + 15 x 51 + 10 x 78 – RB x 100
360 + 765 + 780 – 100Rc = 0
1905 = 100Rc
Rc = 19. 05
But RB + RA= P1 + P2 = P3
19. 05 + RA = 20 + 15 + 10
19. 05 + RA = 45
RA= 25. 95
CaseIII
0 = P1 X 1 + P2X2 + W + L/2 – Rc + L
0 = 20 x 0. 18 + 10 x0. 51 + 11. 14+ 1/2 – Rc + 1
RB= 3. 6+ 5. 1+ 11. 14+ 0. 5 + 1
RB = 21. 34
P1 + P2 +W = RA + RB
20 + 10 + 11. 14 = RA + 21. 34
RA = 19. 8
Sources of Errors
Random error
Taking measurements by several people would mechanically give dissimilar values since each individual may stretch the string by diverse tension. To minimize is by stipulating the circumstances that could lead to the error.
Environmental factors
Taking into consideration of errors presented by the instant working environment. There is a need to take into account or shield the experiment from shakings, drafts, variations in temperature, electronic sound or other effects from neighboring apparatus (Lee, 2010).
Parallax
This error can happen when there is some length or distance between the measuring balance and the indicator used to attain a measurement. If the viewer's eye is not directly aligned with the indicator and scale, the interpretation may be extraordinary (Lee, 2010).
Physical variations
It would be essential to take numerous measurements so as to be examined for accuracy.
Conclusion
The graph shows the relationship between the moments in equilibrium since the clockwise moments should be equal to the anti-clockwise moments.