10/17/2017

The Principle of Moments

Physics scaler balancing report

Talha Tallat
S00180011 (GROUP G)

Table of Contents

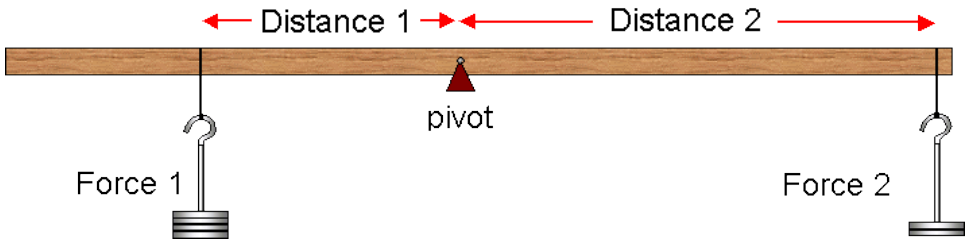
Objectives:

The experiment was carried out to verify the principle of moments. The objective was to reveal the evidence for this project by showing this report with pictures and based on our knowledge and especially to show the results of the fulcrum balance clockwise and anticlockwise.

Theory:

The Principle of Moments reveals that when the object is in equilibrium the sum of the anticlockwise moments about the turning point must be equal to the sum of the clockwise moments.

The diagram that is shown below demonstrates that the bar can only balance on the fulcrum if the weight is equal to both sizes dependent on the distance. It is clearly shown below that distance 2 is greater than distance 1. However, the mass is greater on distance 1 than the mass of distance 2. Which makes it balanced out by the law. Moments = Force in Newtons x perpendicular distance in Meters

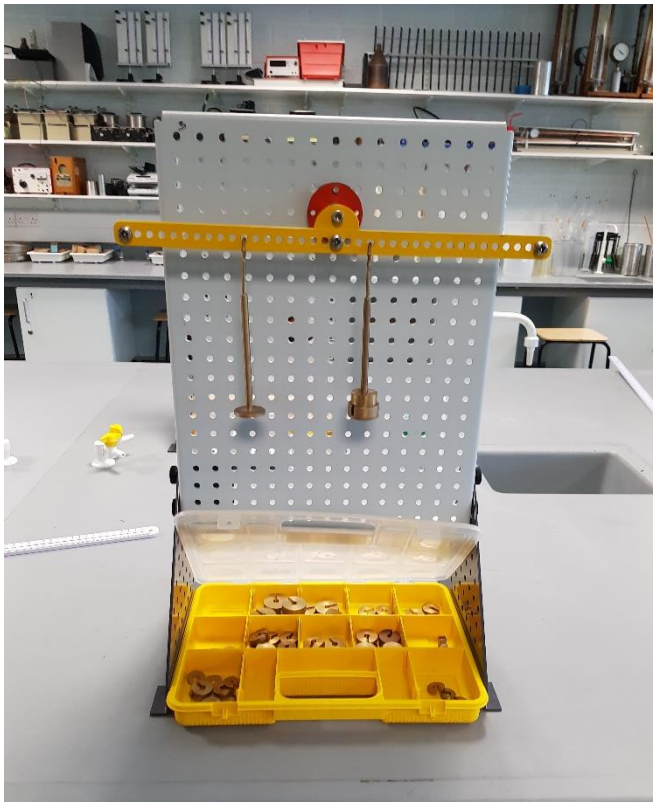


Sum of the clockwise moments = The sum of anticlockwise moments

Force1 x distance1 = force2 x distance2

Apparatus:

The materials that are required for this experiment are listed below with the photo of the materials.



- Stand
- Measuring ruler
- Set of all various kinds of masses
- 50g, 20, 10g and 5g of masses
- Hooks with pan holder
- Balance scaler
- Scaler

Procedure:

At the very beginning of this experiment, our first step was setting up the stand by attaching two hooks to the balancing clockwise and anticlockwise and putting up several different values of masses to the pan holders. The purpose of putting different values of the masses to the different distances is to see which values make the perfect balance horizontally.

The second most crucial step was to make sure the balancing scale is perfectly at a horizontal position and after that take down the reading values that we got from the balancing scaler.

Result:

Reading Number	Anti Clockwise Moments						Clockwise Moments					
	Mass		Force	Distance		Moment of force	Mass		Force	Distance		Moment of force
	(g)	(kg)	(N)	(mm)	(m)	(Nm)	(g)	(kg)	(N)	(mm)	(m)	(Nm)
1	60	0.06	0.588	120	0.120	0.07056	75	0.075	0.7357	100	0.1	0.0735
2	175	0.175	1.71	60	0.06	0.1026	70	0.070	0.686	150	0.150	0.1029
3	140	0.140	1.4	70	0.07	0.098	125	0.125	1.226	80	0.08	0.0980
4	55	0.055	0.54	100	0.1	0.054	290	0.290	2.844	20	0.02	0.0568
5	90	0.090	0.88	150	0.15	0.132	80	0.080	0.784	170	0.170	0.1328
6	260	0.260	2.55	60	0.06	0.153	105	0.105	1.030	150	0.150	
7	255	0.255	2.50	50	0.05	0.125	75	0.075	0.735	170	0.170	
8	60	0.06	0.59	50	0.05	0.0295	150	0.150	1.471	20	0.02	
9	255	0.155	1.52	40	0.04	0.0608	70	0.070	0.686	90	0.09	
10	50	0.05	0.50	80	0.08	0.04	135	0.135	1.324	30	0.03	

Discussion of result:

The discussion between 2 members of the group. My self and my team member this group were talking about the results of this project. We had little issues between balancing the clockwise and anticlockwise. Because at the very end of the experiment we couldn't find the right value for masses to balance the clockwise and anticlockwise.

Conclusions:

The experiment that was carried out was to verify that, what we learned in the first section of the class which is a theory based on the experiment that was carried out. This was to see if our experiment can be verifying to the law of Sum of clockwise moments = Sum of the anti-clockwise moments.

Appendices:

This experiment was expected to be interesting for us during the experiment just because we were learning a lot from that little experiment.

This improves a lot of knowledge about the scaling items.

References:

[1] Schoolphysics::welcome

[2] Youtube.com/David Oon