

Bending moment lab



**ASSIGN
BUSTER**

MANUKAU INSTITUTE OF TECHNOLOGY School of Mechanical Engineering & Trades DIPLOMA IN MECHANICAL ENGINEERING Beam Reactions OBJECT 1.

To determine both the theoretical and actual support reactions of a simple vertically loaded beam, showing that the loadings on the supports are directly proportional to the distances of the loads from the supports; thus illustrating the principle of the moments of forces. 2. To determine the beam

support reactions for a horizontal beam carrying vertical loads at positions across the span. APPARATUS Two support stands, beam of uniform round

bar, load hangers, known loads, two spring balances with suitable supports

for beam. 1. PROCEDURE - Assemble the apparatus as a simply supported

beam with a span of 900mm. Adjust the equipment so that the beam is

horizontal, the spring balances, and beam supports are vertical. Note the

spring balance readings for each support with just the bar in place. - Place a

10N load onto the load hanger and suspend it directly beneath one of the

spring balances. Note both spring balance readings. - Next move the mass

hanger 100mm along bar and note both spring balance readings. Repeat this

procedure of incremental movement and readings until mass hanger is

suspended directly under the spring balance at the opposite end of beam to

the initial step. - Calculate the theoretical beam reactions and use a graph to

show the comparison of the two sets of data. 2. PROCEEDURE - Suspend the

beam to give a span of 900mm. - Place loads as shown in the diagrams

below and record the measured beam reactions. - Calculate the theoretical

beam reactions and use a graph to show the comparison of the two sets of

data. BEAM LOADING PATTERNS a) 10N 20N 250mm 750mm b) 20N 20N

500mm 750mm c) 10N 15N 10N 150mm 400mm 800mm RESULTS Record

the results for each part of the lab work into separate tables. GRAPHS

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Produce neat graphs for each part of the lab to show the results obtained.

Use these graphs to draw conclusions about the results. **CONCLUSIONS**

Discuss the findings from the graphs. It is not sufficient to simply say that the theory has been shown to be correct.