

Torques on a Beam

A meterstick is supported at each end. A 200-g weight is moved to various positions on the meterstick. How much of the weight do we expect to be supported at each end of the meterstick? We will designate the left end as the fulcrum ($r = 0$).

weight of meterstick: _____ g

1. Simple case: 200-g weight in the middle.

a) How much of the weight do you expect to be supported at each end? (No need to calculate torques.)

b) Measure the weight at each end with the scale.

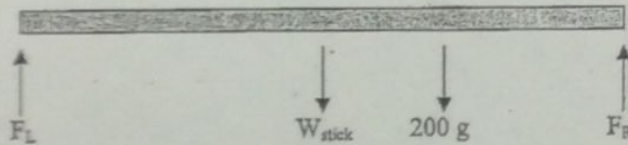
F_L (predicted) =

F_R (predicted) =

F_L (measured) =

F_R (measured) =

2. Now place the 200 g weight at $r = 70$ cm.



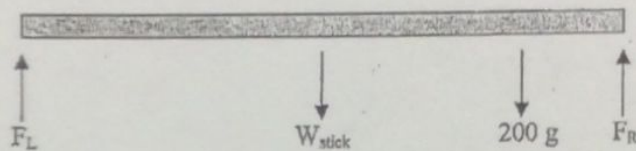
| | Force | r | torque | CW/CCW |
|-------|-----------------|-------|--------|--------|
| F_L | F_L (unknown) | 0 | 0 | XXX |
| Stick | _____ | _____ | _____ | _____ |
| 200 g | 200 g | 70 cm | _____ | _____ |
| F_R | F_L (unknown) | _____ | _____ | _____ |

Solve for F_L and F_R .

F_L (calculated) =
 F_L (measured) =

F_R (calculated) =
 F_R (measured) =

3. Now place the 200 g weight at $r = 90$ cm.



| | Force | r | torque | CW/CCW |
|-------|-----------------|-------|--------|--------|
| F_L | F_L (unknown) | 0 | 0 | XXX |
| Stick | _____ | _____ | _____ | _____ |
| 200 g | 200 g | 90 cm | _____ | _____ |
| F_R | F_L (unknown) | _____ | _____ | _____ |

Solve for F_L and F_R .

F_L (calculated) =
 F_L (measured) =

F_R (calculated) =
 F_R (measured) =