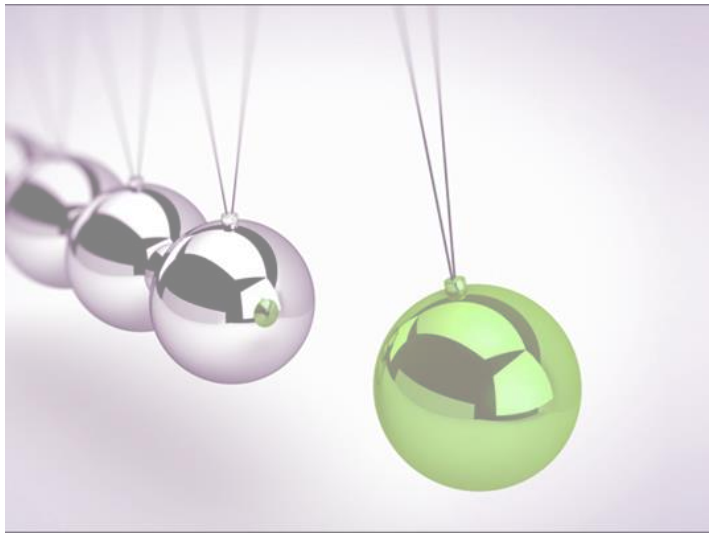
Mechanics

2015 EdExcel A Level Physics
Topic 2

Principle of Moments



Physics tutor online

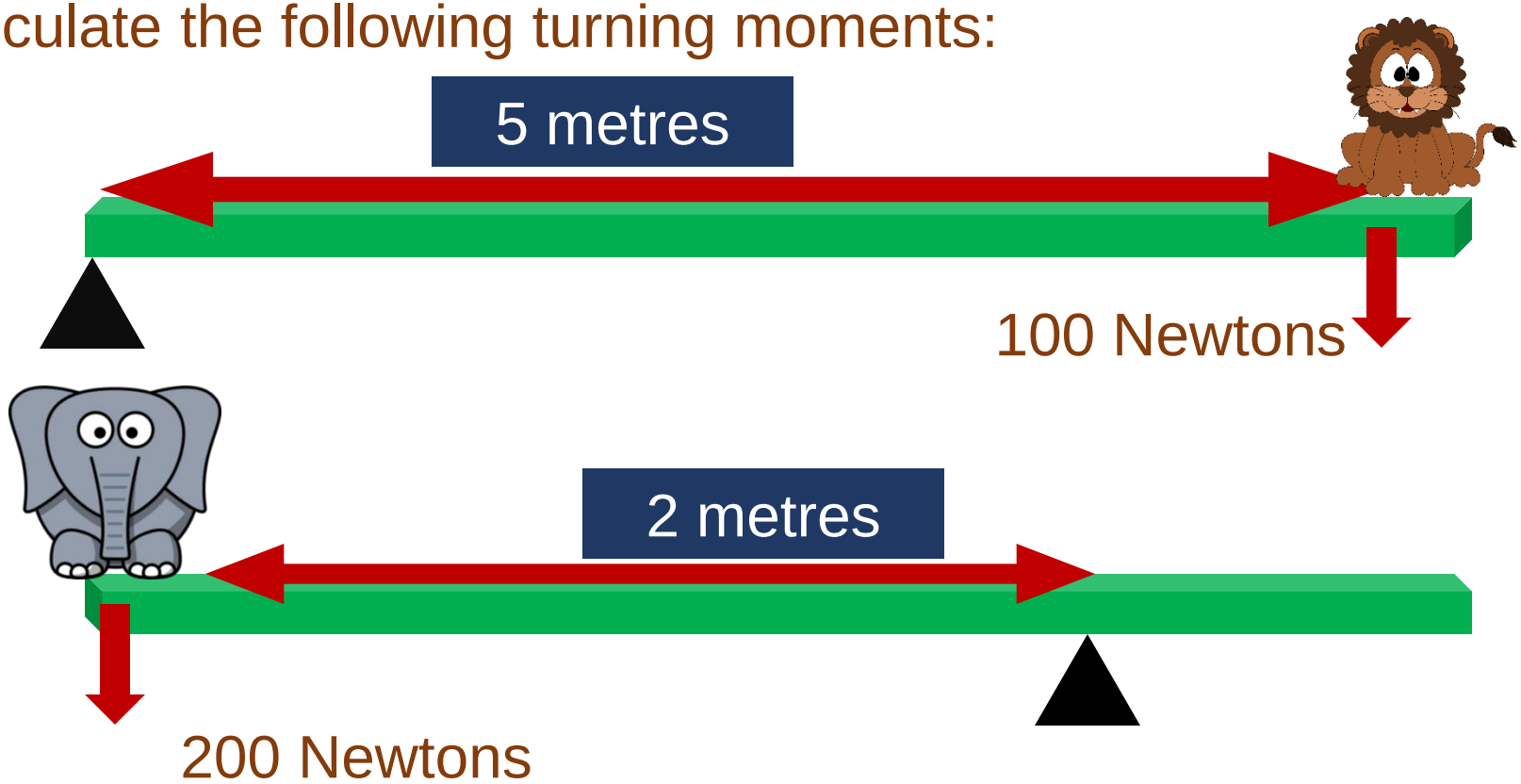
Moments revision

15/09/2018

A moment is a “turning force”, e.g. trying to open or close a door or using a spanner. The size of the moment is given by:

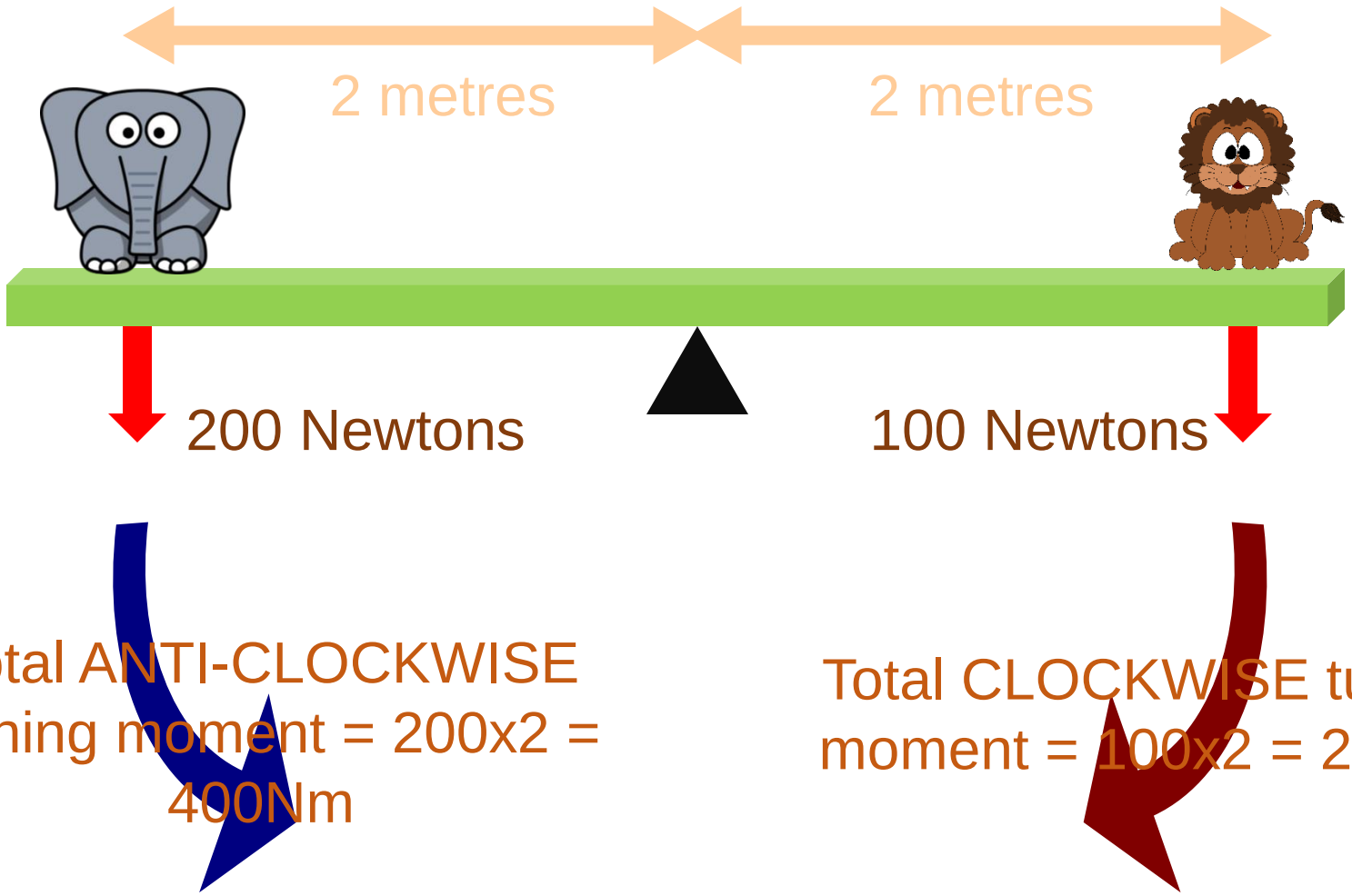
Moment (in Nm) = force (in N) x PERPENDICULAR distance from pivot (in m)

Calculate the following turning moments:



Turning Moments revision

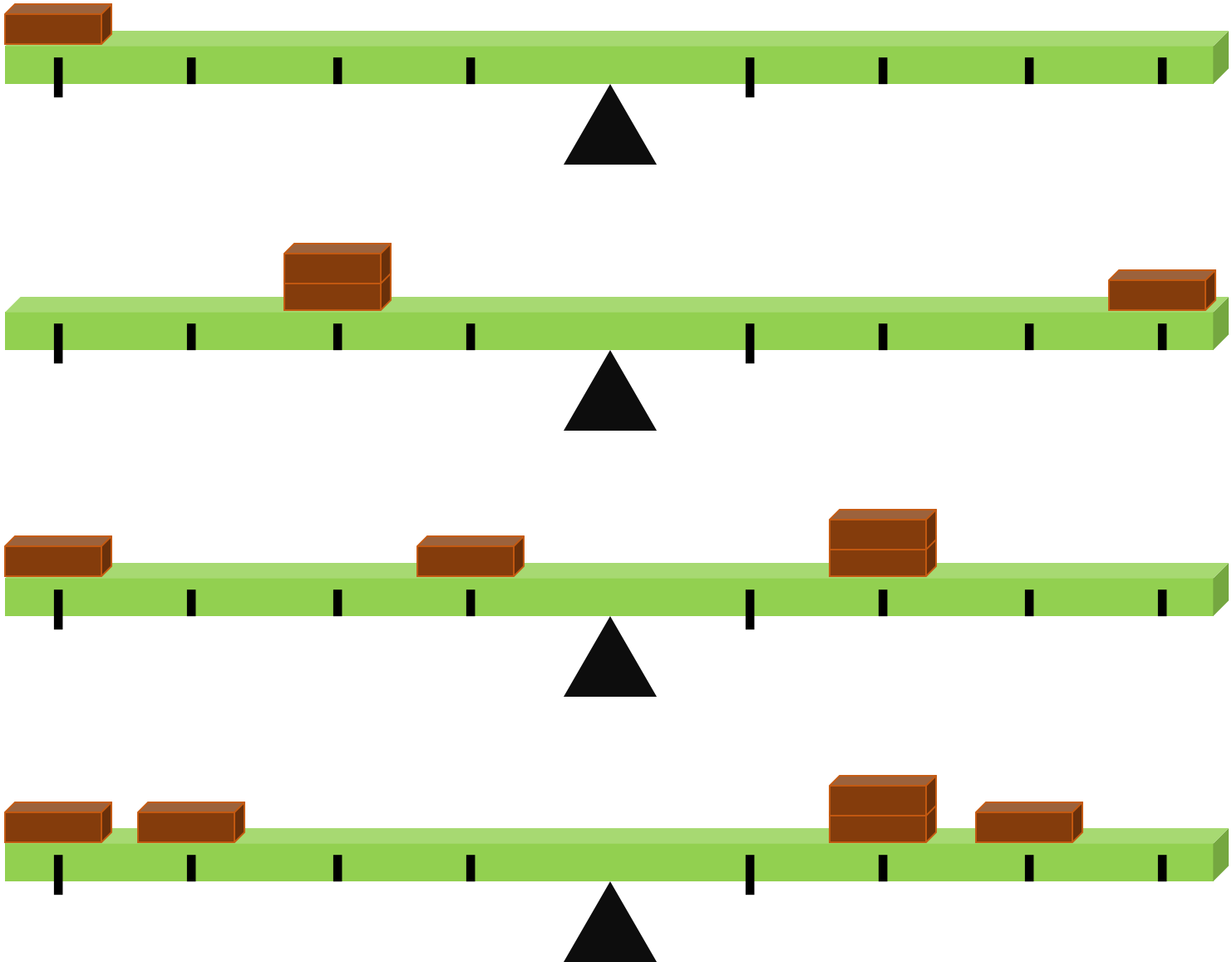
15/09/2018



The anti-clockwise moment is bigger so the seesaw will turn anti-clockwise

Balanced or unbalanced?

15/09/2018

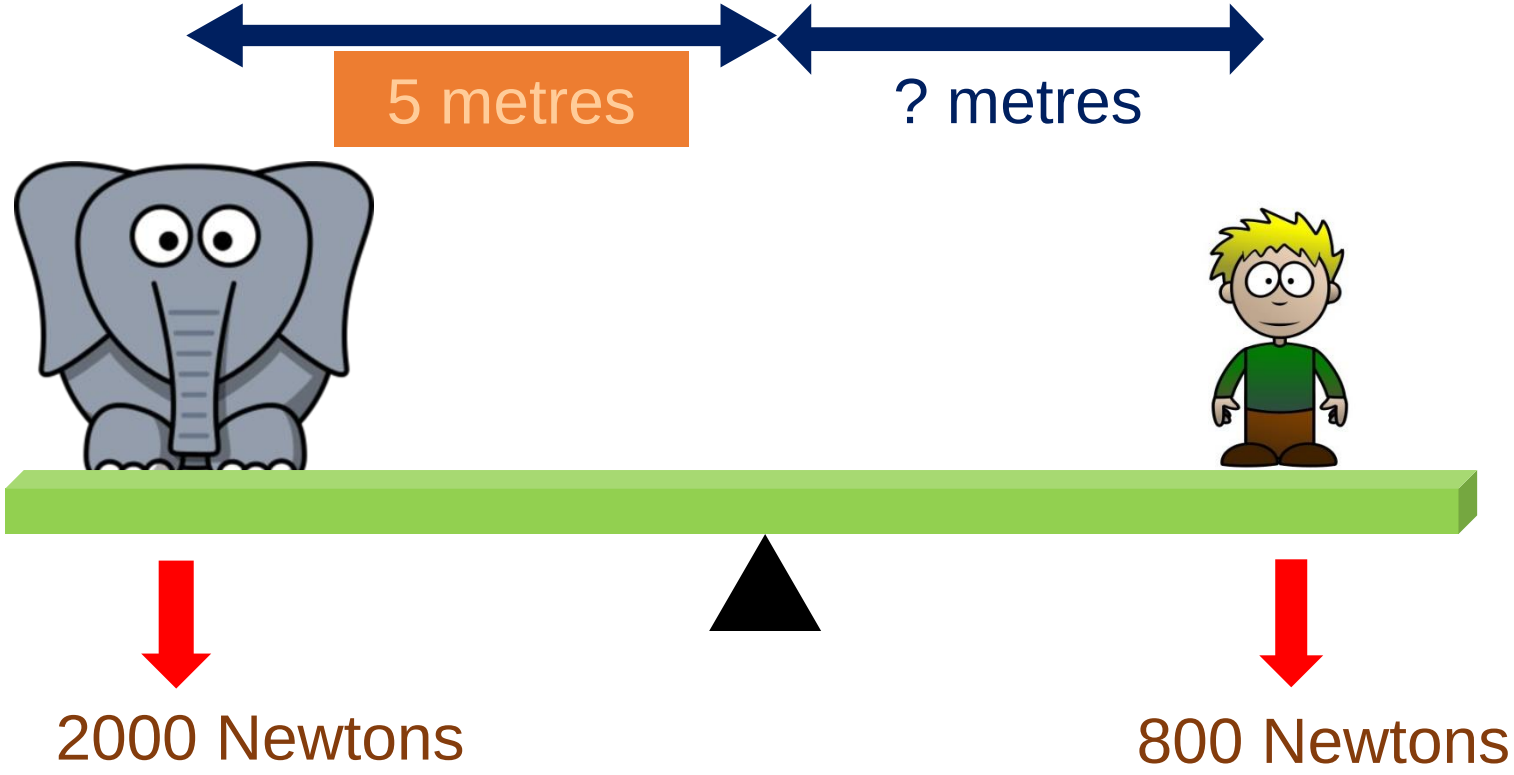


The Principle of Moments

"If a body is in equilibrium the sum of the clockwise moments is equal to the sum of the anti-clockwise moments."

An example question

This seesaw is balanced:



An example question

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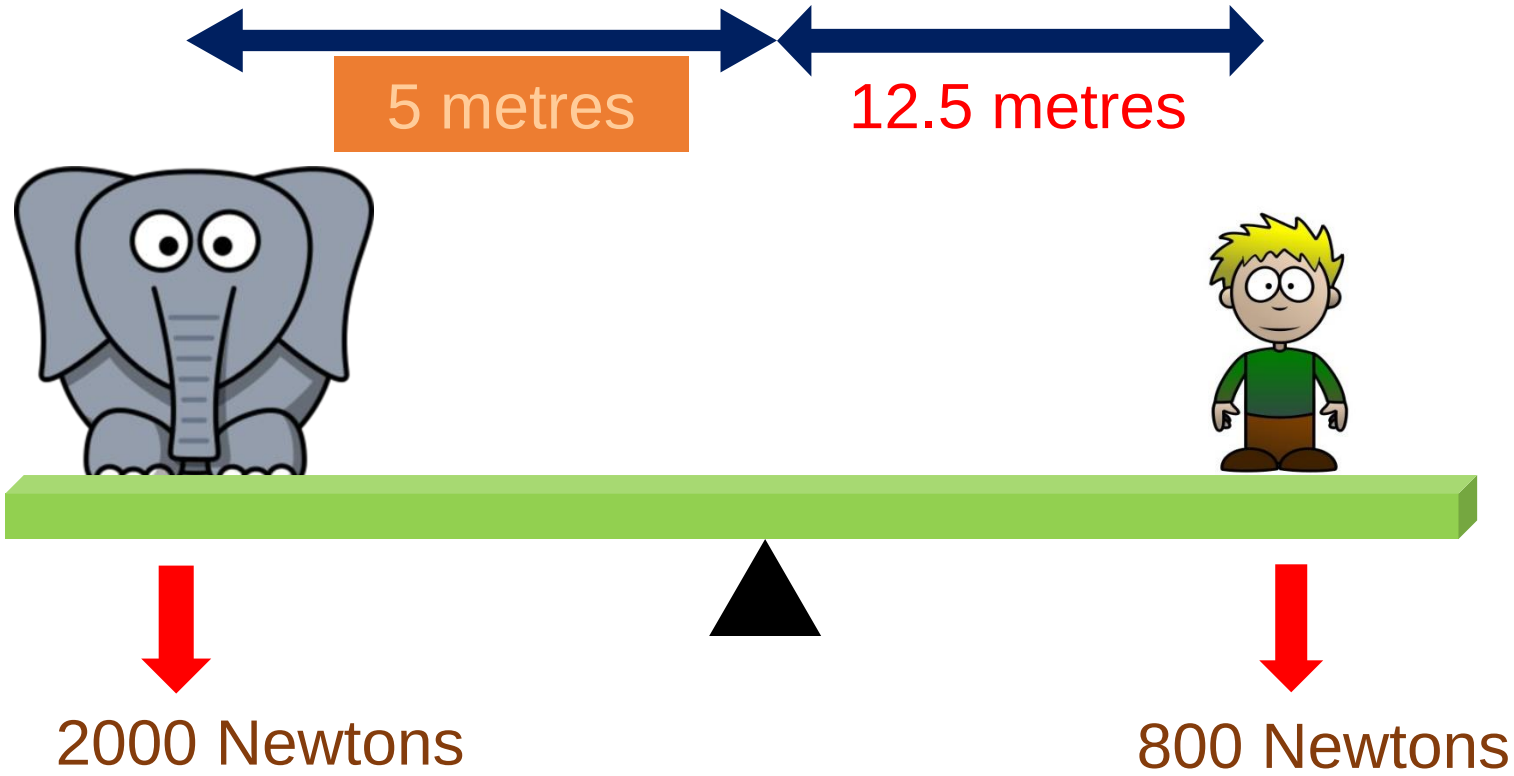
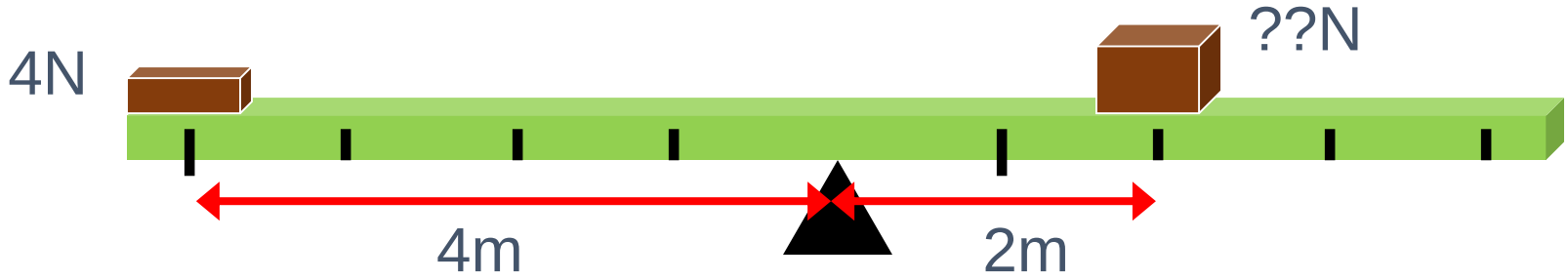


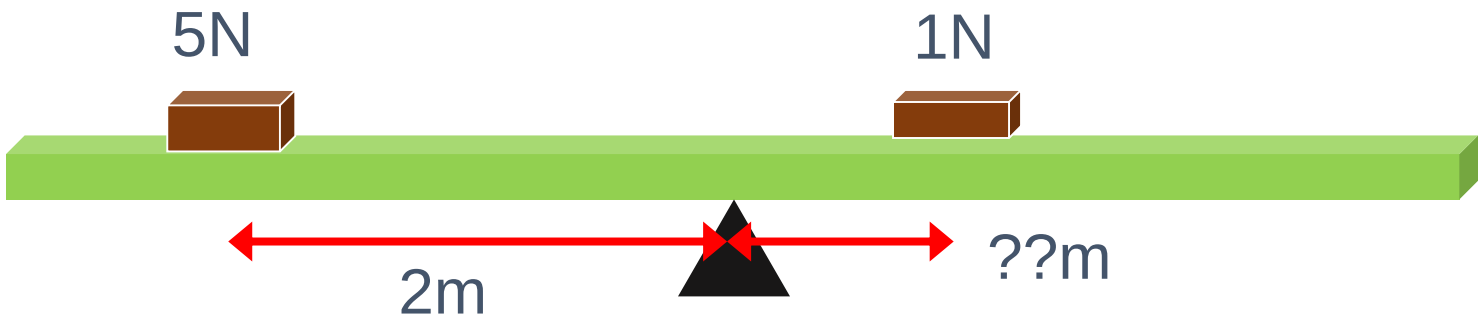
5x2000 = ? X 800

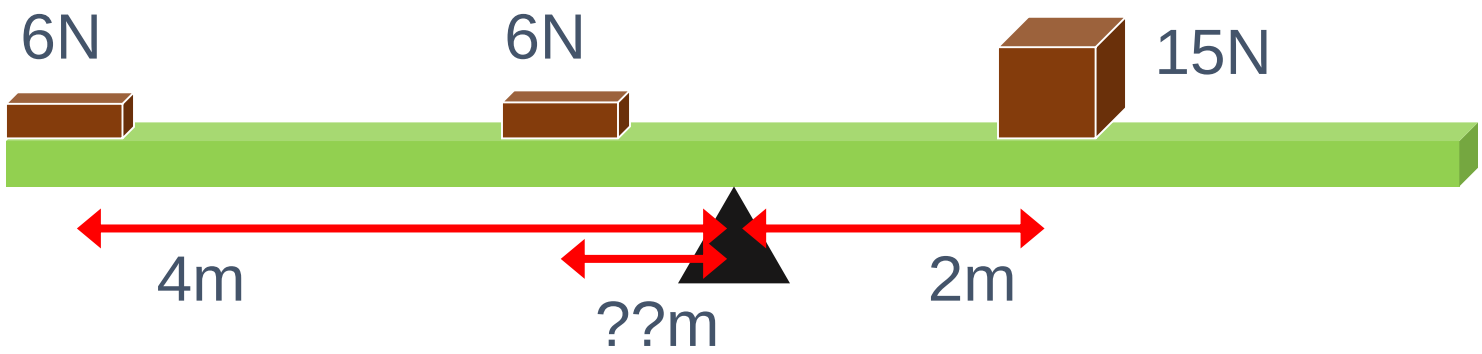
? = (5x2000)/800 = 12.5m

Calculate the missing quantity

The following are all balanced:







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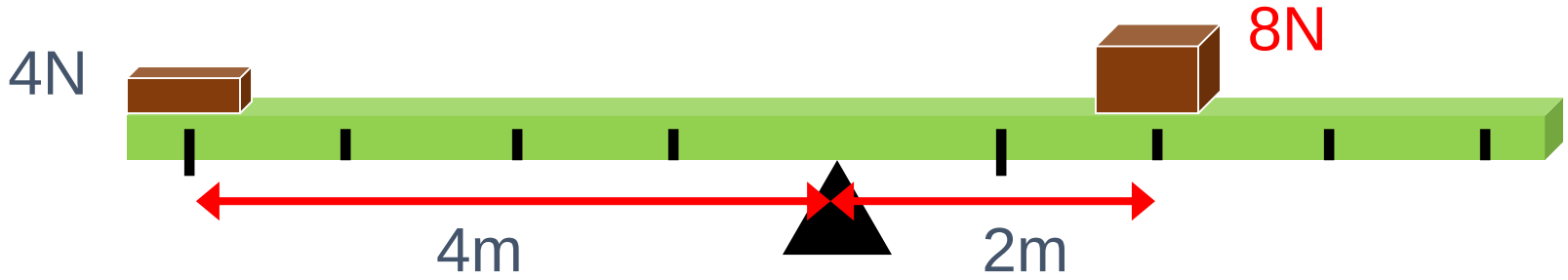
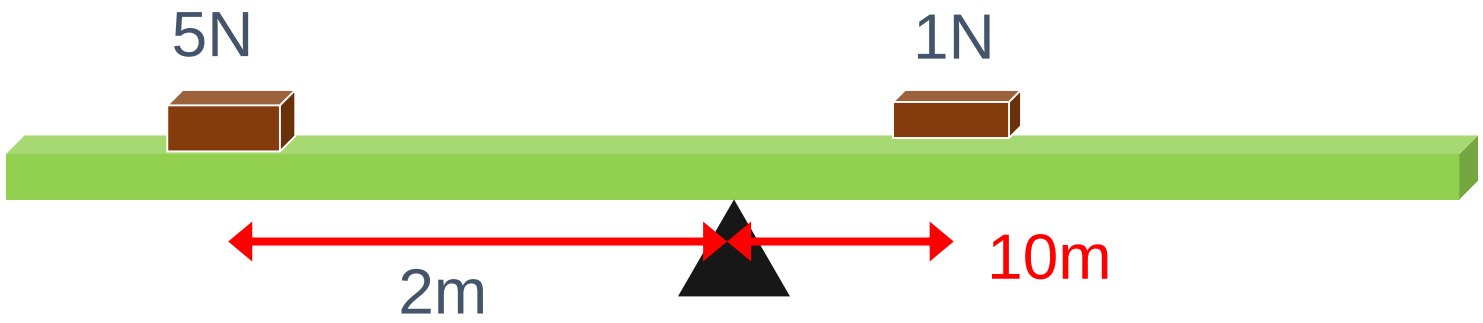
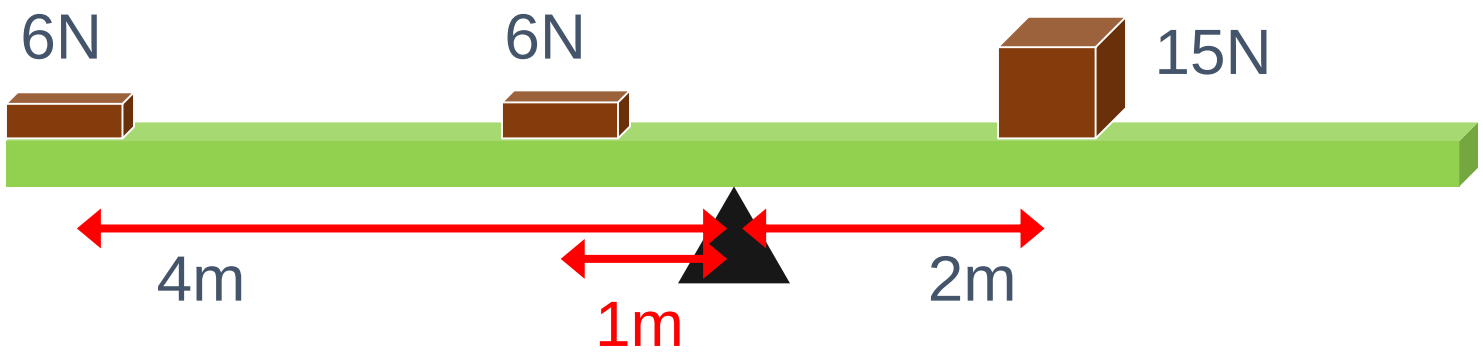


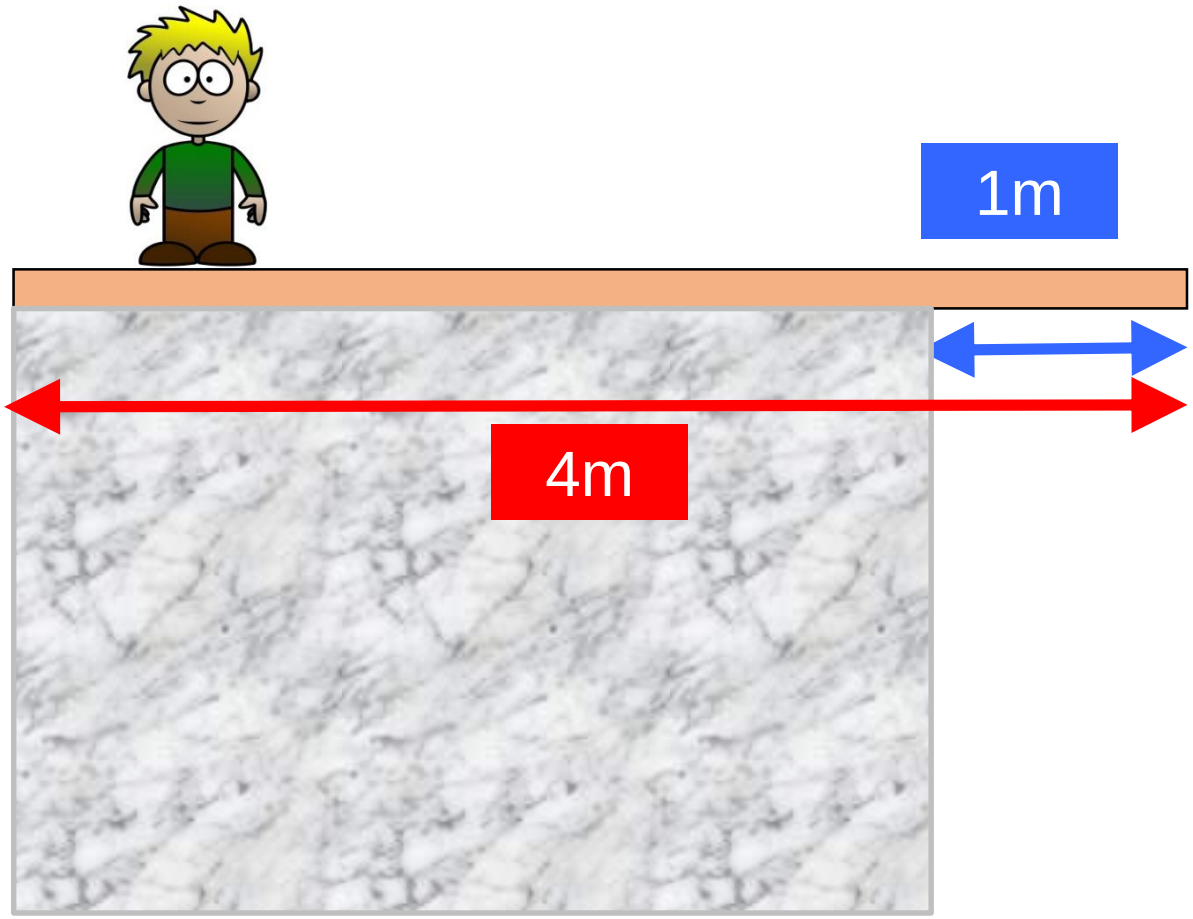




Turning Moments

Consider a man walking along a plank of wood on a cliff.

How far can he walk over the cliff before the plank tips over?



Man's weight = 800N

Plank's weight = 200N

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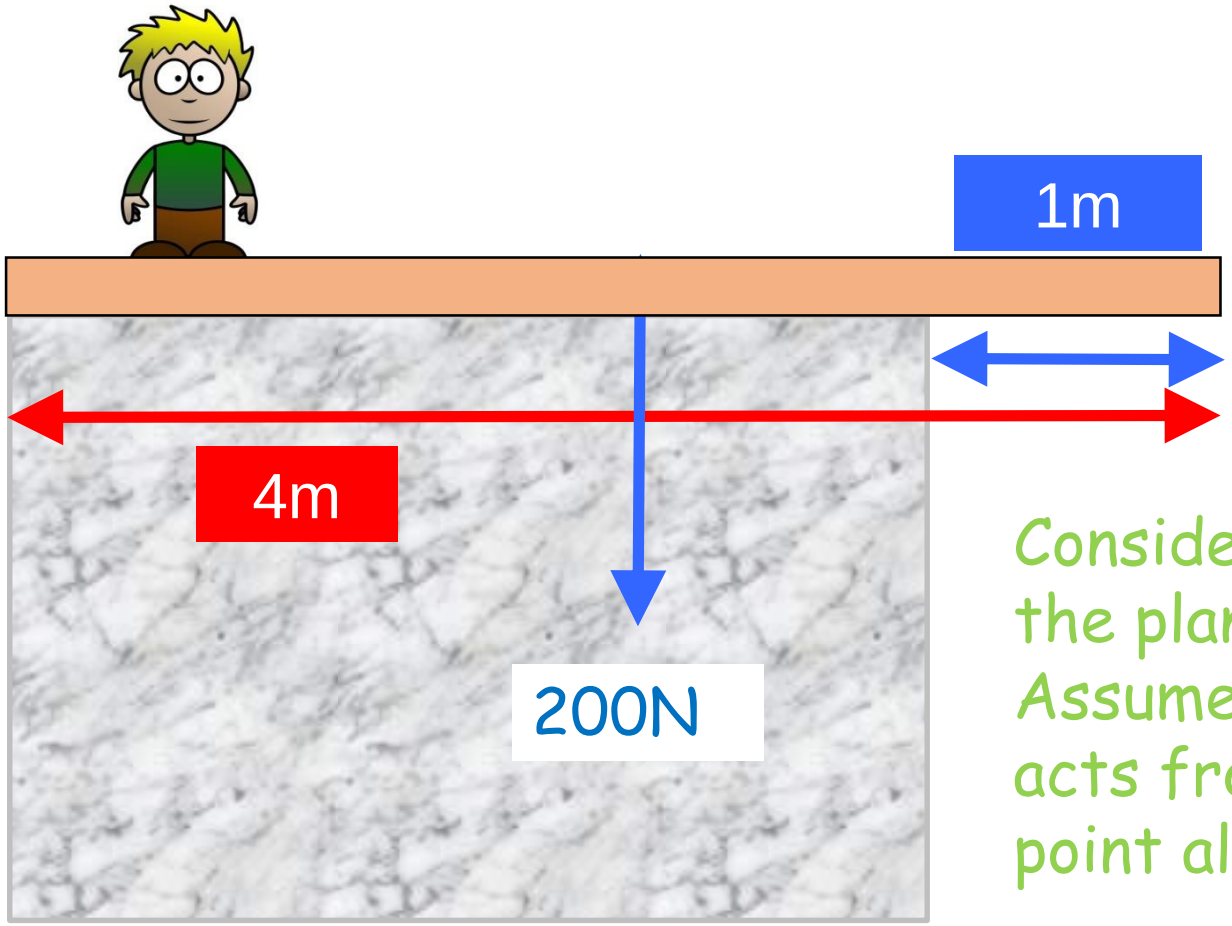

Man's weight = 800N

Plank's weight = 200N

Consider the weight of the plank
Assume that it's weight acts from the midway point along it's length

Turning Moments

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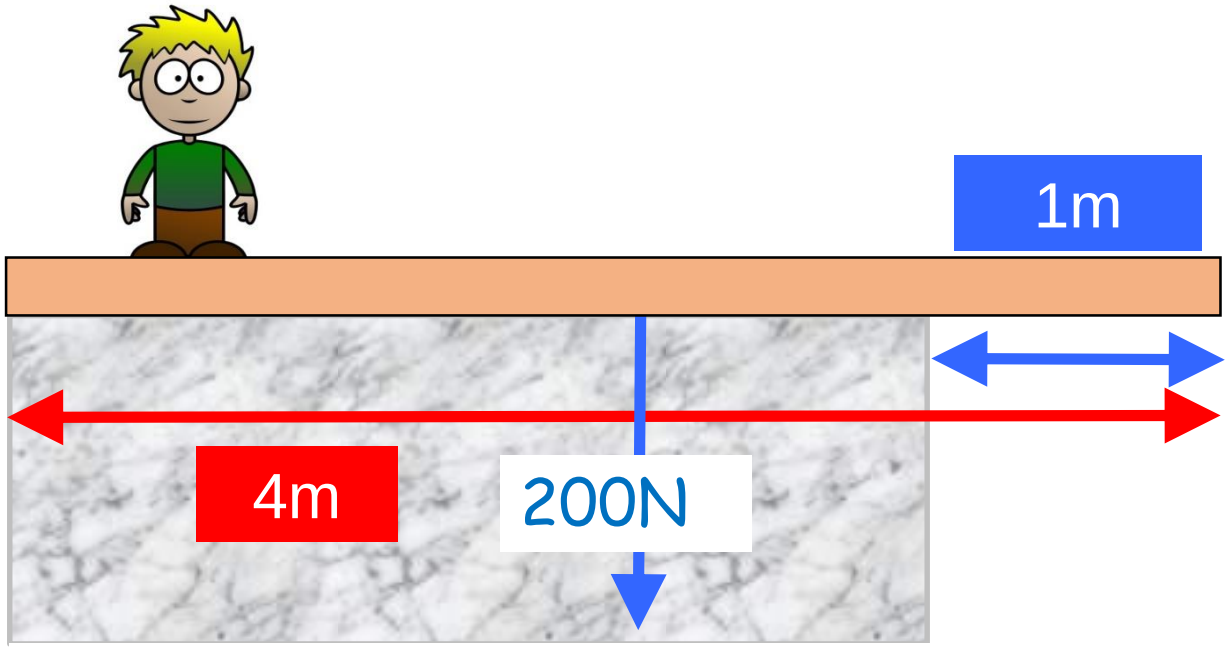

Man's weight = 600N

Plank's weight = 200N

Anti-clockwise moment
200N x 1m = 200Nm

Clockwise moment
= 600 x D

600D = 200
D=0.33m