Moments

Question Paper

Course	CIE IGCSE Physics
Section	1. Motion, Forces & Energy
Topic	Moments
Difficulty	Hard

Time Allowed 10

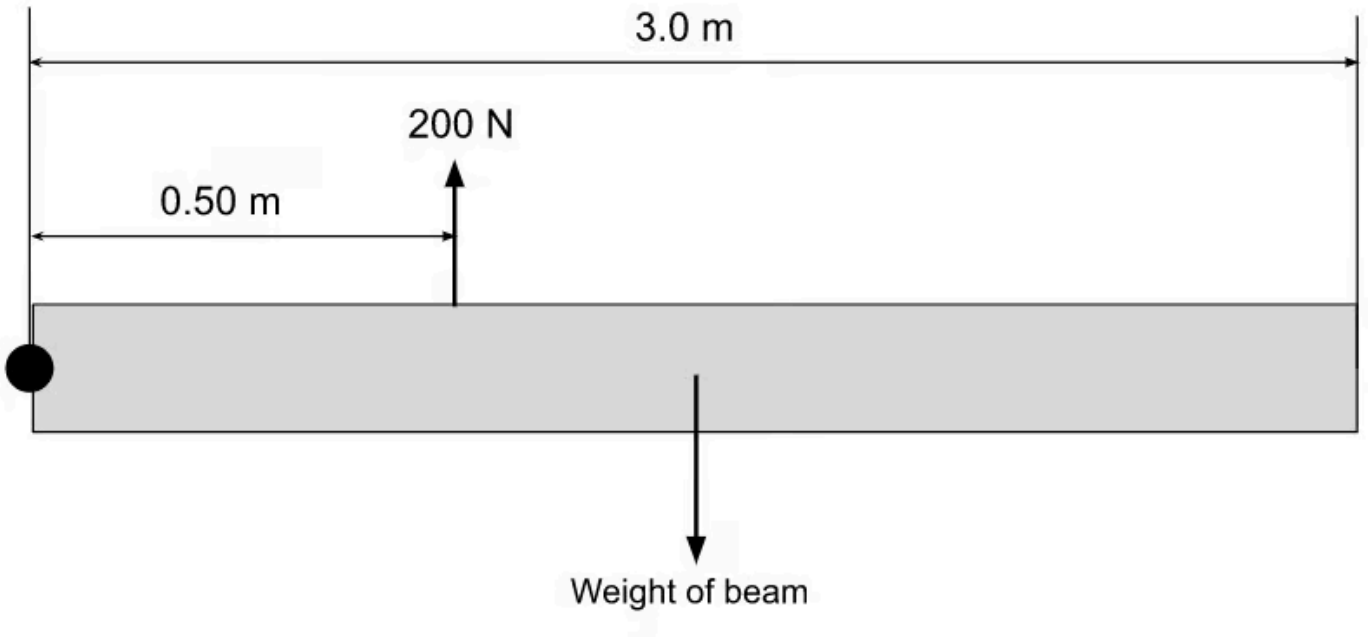
Score /4

Percentage /100

Question 1

A uniform beam is pivoted at one end and suspended by a 200 N force as shown in the diagram.

The beam is in equilibrium.



What is the weight of the beam?

A. 66.7 N

B. 33.3 N

C. 1200 N

D. 200 N

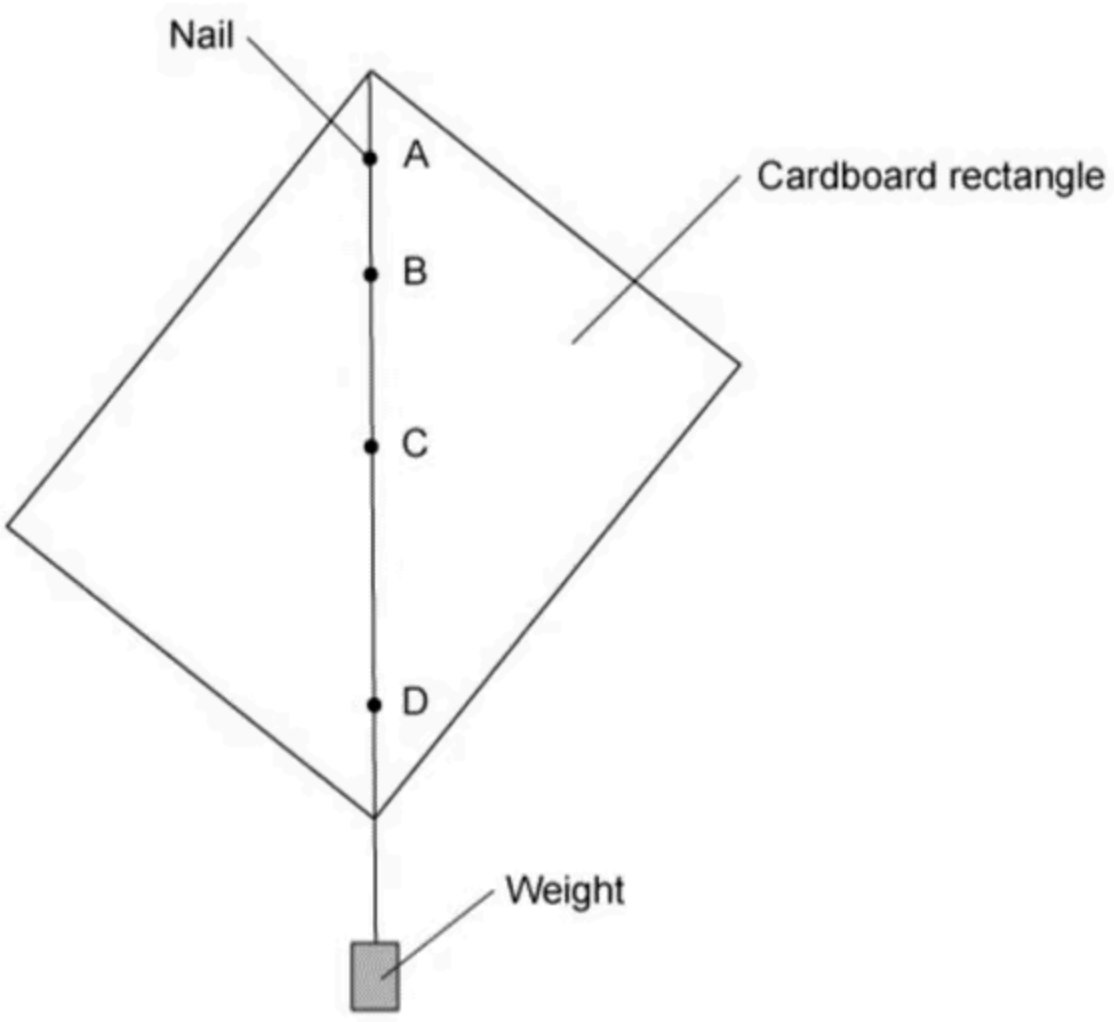
[1 mark]

Question 2

Extended tier only

A cardboard rectangle is hung from a nail as shown in the diagram.

A plumb line is also hung from the nail.



Which of the points labelled shows the centre of gravity of the cardboard rectangle?

[1 mark]

Question 3

Extended tier only

A uniform beam of wood of mass M rests on a pivot. The far left side of the wood is tied to a bolt in the floor with a length of rope with tension T, such that it lies completely horizontal. An object of mass m is placed with its centre of gravity on the very end of the right hand side of the beam.

The perpendicular distance from the rope to the pivot is one quarter of the beam's length.

Which expression for the mass of the beam is correct?

A. $M = \frac{T}{g} - 3m$

B. $M = 4T + 12m$

C. $M = T - 3m$

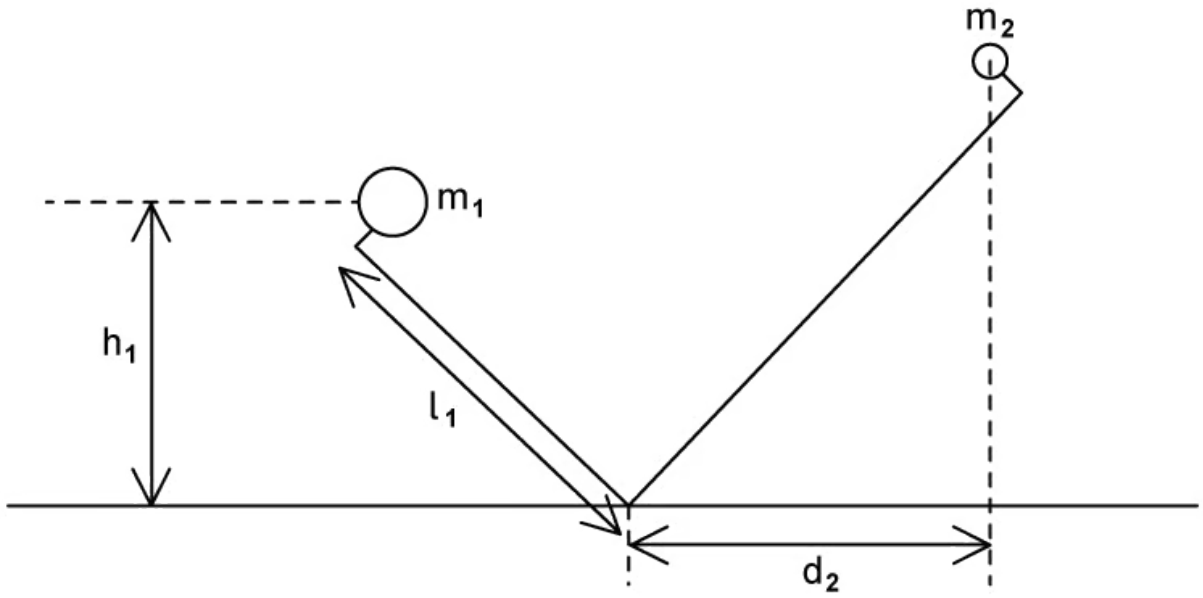
D. $M = Tg - 3mg^2$

[1 mark]

Question 4

Extended tier only

A "V" shaped object has a sphere attached to either end of the "V" and is balanced on its point. The length of the short arm of the object is l_1. The sphere of mass m_1 is a height h_1 off the ground. The sphere of mass m_2 is a horizontal distance of d_2 from the point of the shape.



The object is in equilibrium. Which expression for d_2 is correct?

A. $d_2 = \frac{m_1 l_1}{m_2}$

B. $d_2 = \frac{m_1 \sqrt{l_1^2 - h_1^2}}{m_2}$

C. $d_2 = \frac{m_1 \sqrt{l_1^2 + h_1^2}}{m_2}$

D. $d_2 = \frac{m_1 h_1}{m_2}$

[1 mark]