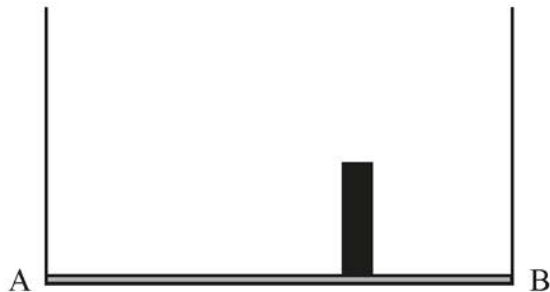


- 6 A shelf consists of a horizontal uniform plank AB of length 0.8m and mass 5 kg with light inextensible vertical strings attached at each end. A stack of bricks each of mass 2.3 kg is placed on the plank as shown in the diagram.



- (a) Explain the meaning of each of the following modelling assumptions.

- The stack of bricks is modelled as a particle.
- The plank is modelled as uniform.

[2]

Either of the strings will break if the tension exceeds 75 N.

- (b) Find the greatest number of bricks that can be placed at the centre of the plank without breaking the strings. [2]
- (c) Find an expression for the moment about A of the weight of a stack of n bricks when the stack is at a distance of x m from A. State the units for your answer. [2]
- (d) Calculate the greatest distance from A that the largest stack of bricks can be placed without a string breaking. [3]