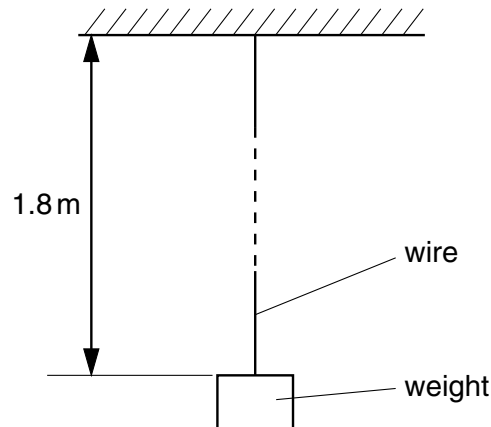


- 9 An aluminium wire of length 1.8 m and area of cross-section  $1.7 \times 10^{-6} \text{ m}^2$  has one end fixed to a rigid support. A small weight hangs from the free end, as illustrated in Fig. 9.1.



**Fig. 9.1**

The resistance of the wire is  $0.030 \, \Omega$  and the Young modulus of aluminium is  $7.1 \times 10^{10} \text{ Pa}$ .

The load on the wire is increased by 25 N.

**(a)** Calculate

- (i)** the increase in stress,

increase = ..... Pa

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- 3 (a) Explain what is meant by the *centre of gravity* of an object.

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- (b) A non-uniform plank of wood XY is 2.50 m long and weighs 950 N. Force-meters (spring balances) A and B are attached to the plank at a distance of 0.40 m from each end, as illustrated in Fig. 3.1.

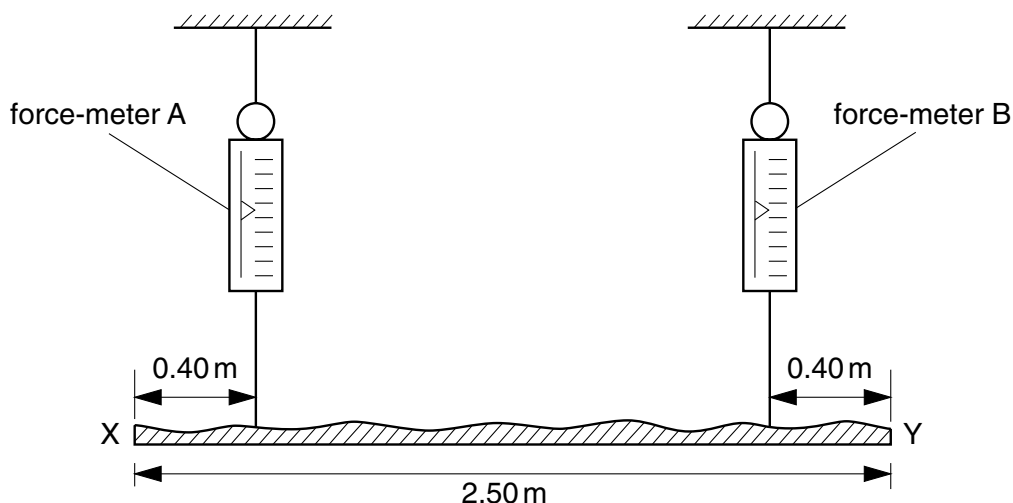


Fig. 3.1

When the plank is horizontal, force-meter A records 570 N.

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[6]

Answer **all** the questions in the spaces provided.

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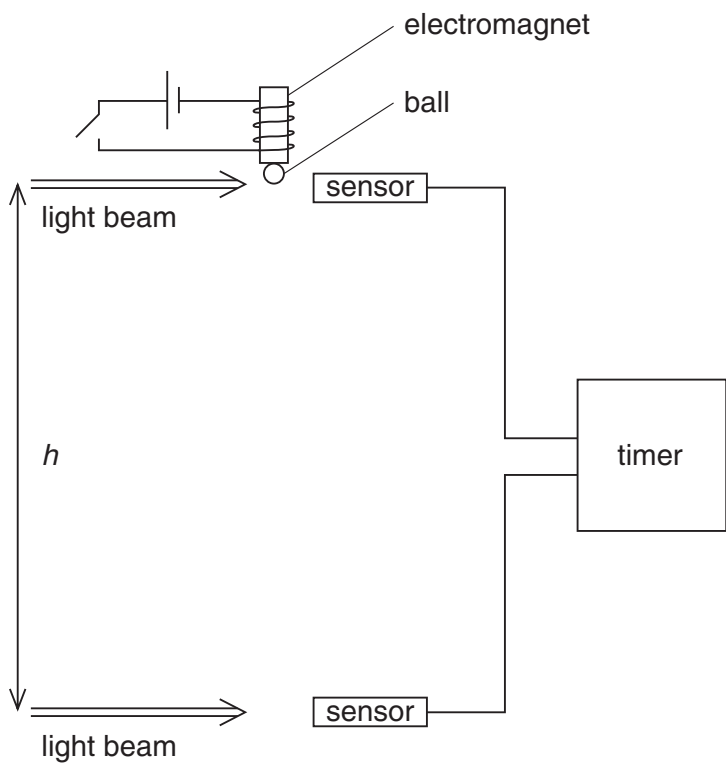


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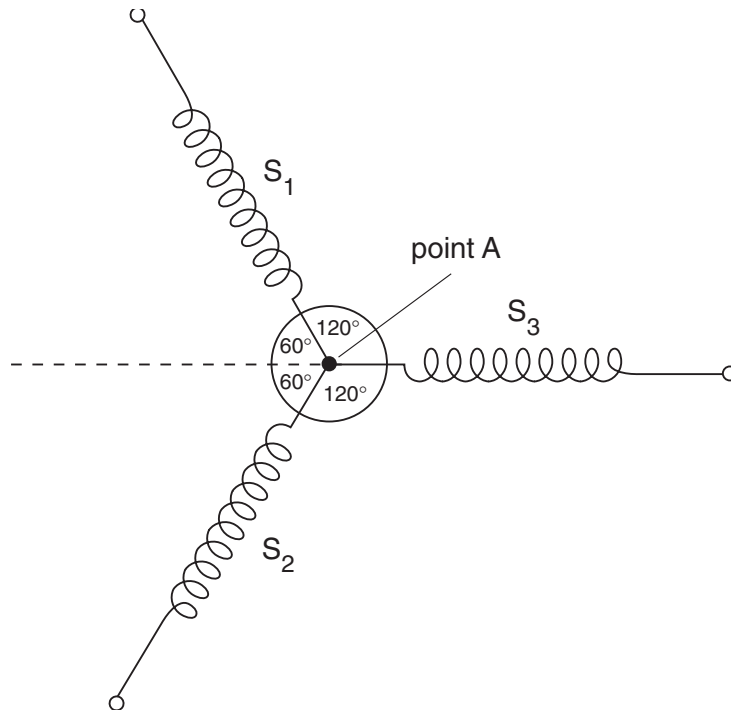
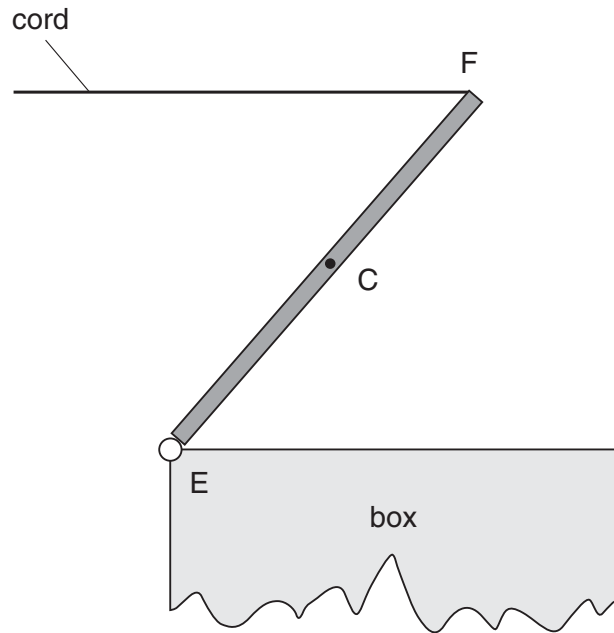


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- (c) The lid of a box is hinged along one edge E, as shown in Fig. 3.2.



**Fig. 3.2**

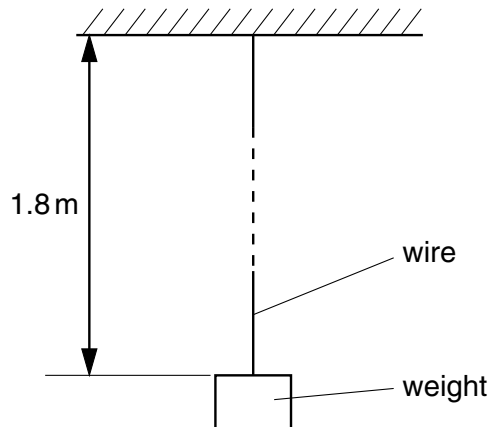
The lid is held open by means of a horizontal cord attached to the edge F of the lid. The centre of gravity of the lid is at point C.

On Fig. 3.2 draw

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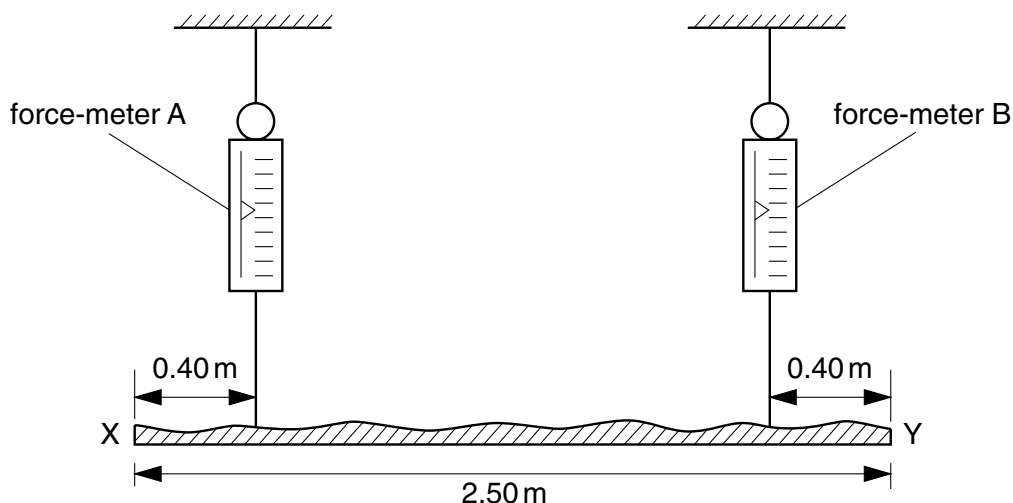


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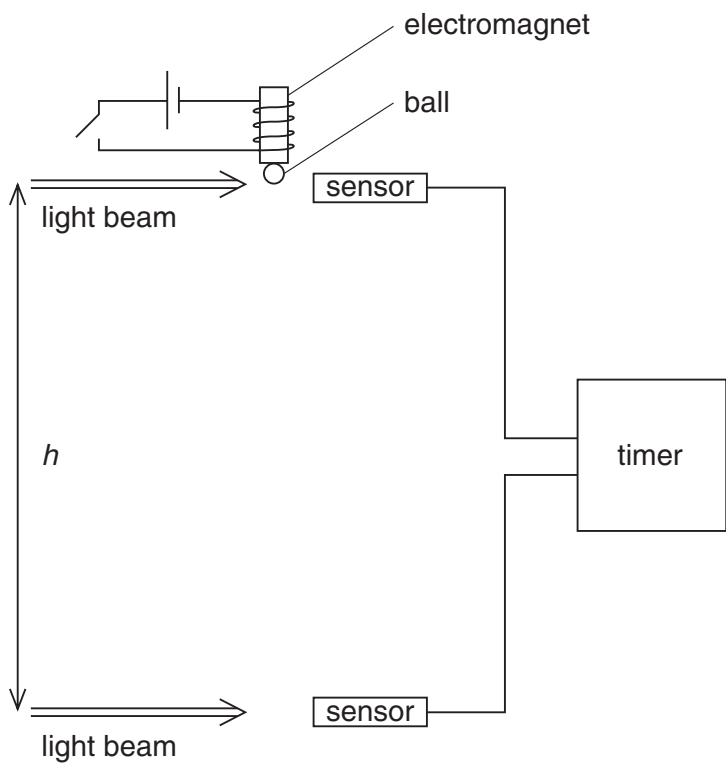


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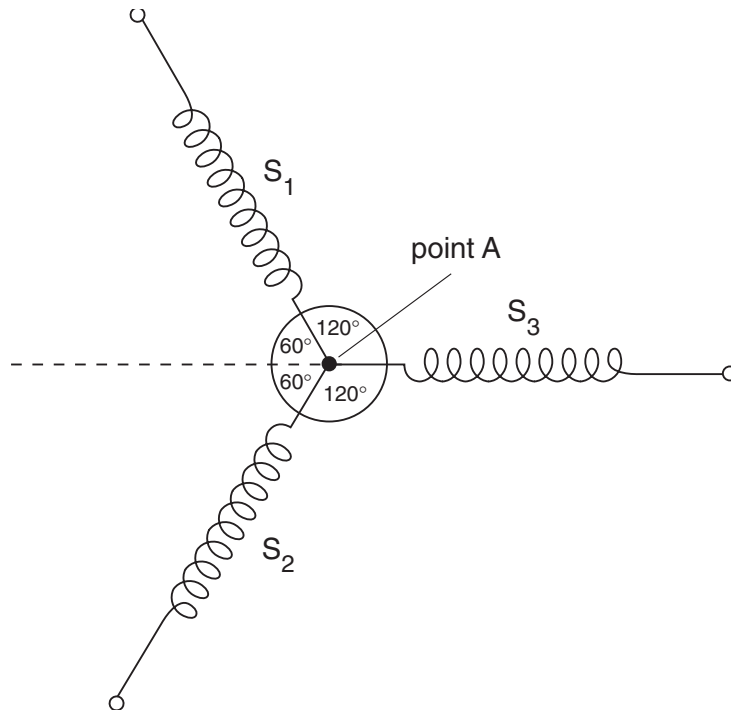
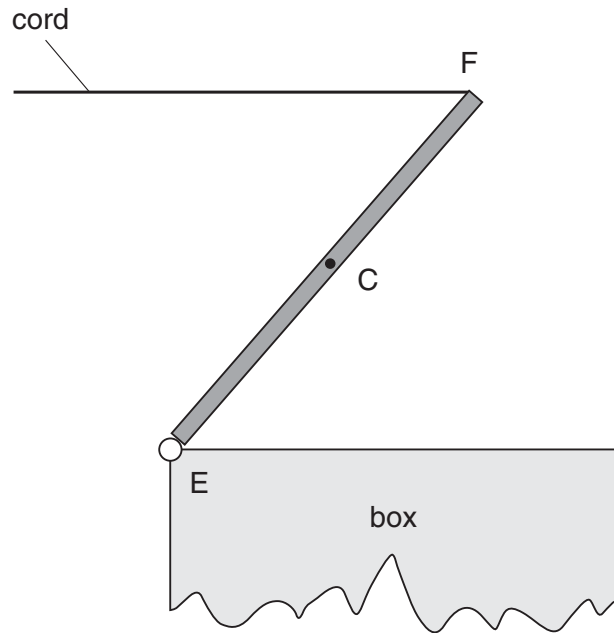


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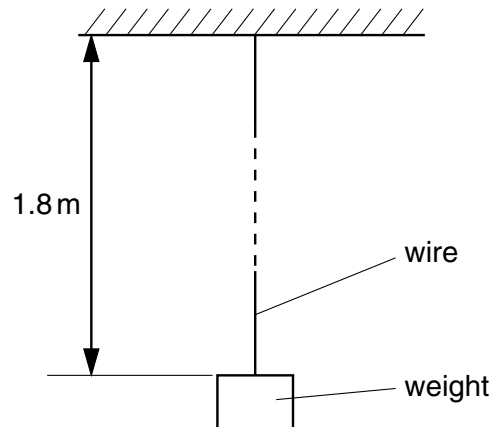
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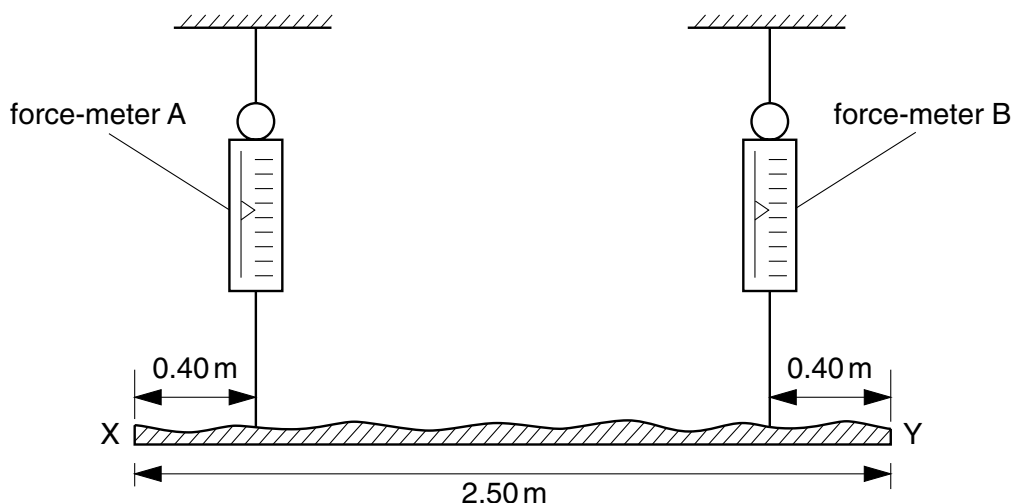


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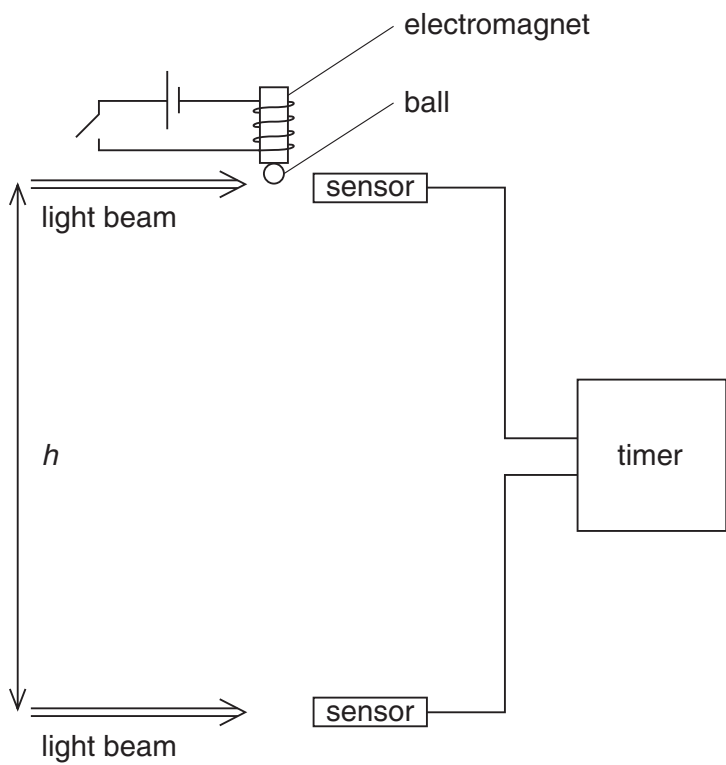
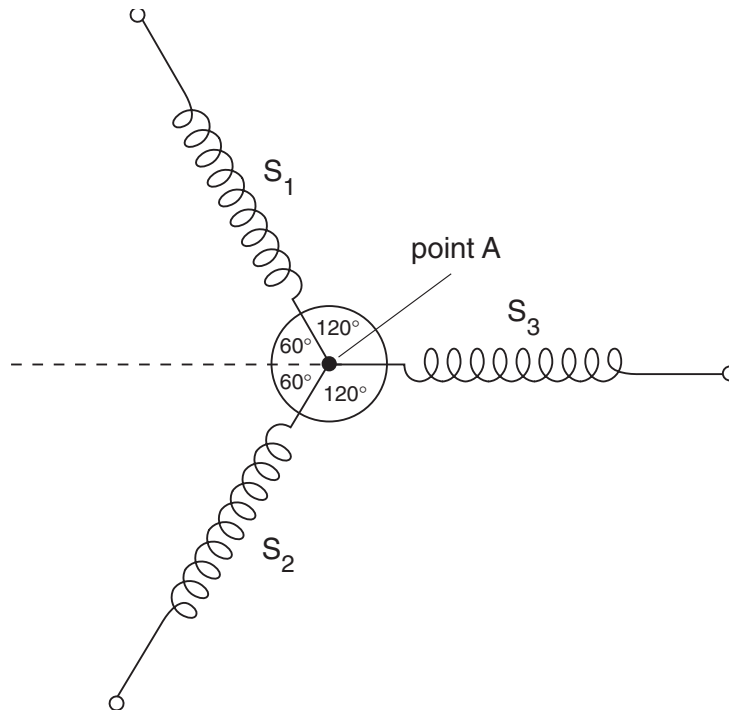


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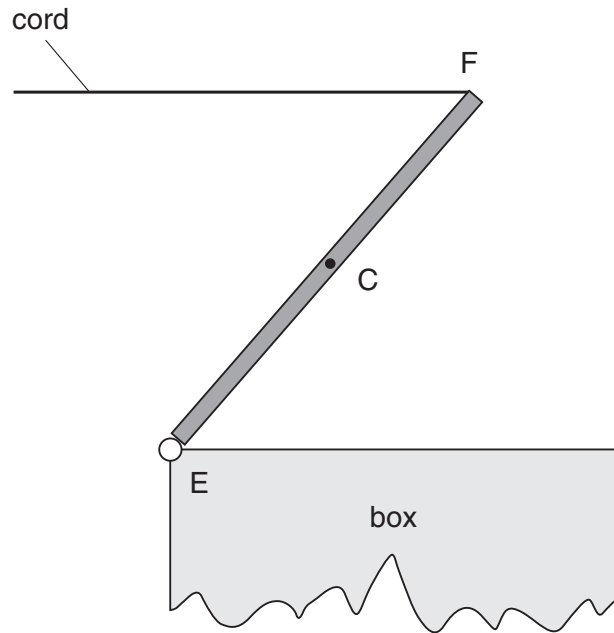


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