

- 2 (a) Define the *torque* of a couple.

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 [2]

- (b) A uniform rod of length 1.5 m and weight 2.4 N is shown in Fig. 2.1.

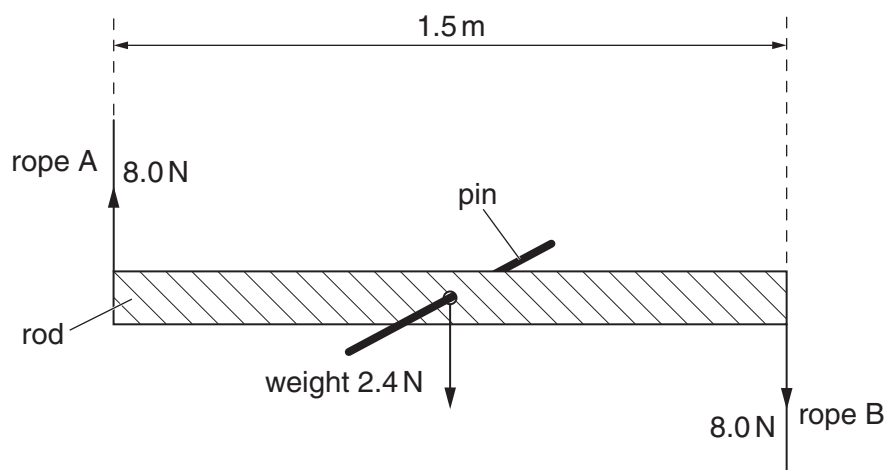


Fig. 2.1

The rod is supported on a pin passing through a hole in its centre. Ropes A and B provide equal and opposite forces of 8.0 N.

- (i) Calculate the torque on the rod produced by ropes A and B.

torque = Nm [1]

- (ii) Discuss, briefly, whether the rod is in equilibrium.

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 [2]

- (c) The rod in (b) is removed from the pin and supported by ropes A and B, as shown in Fig. 2.2.

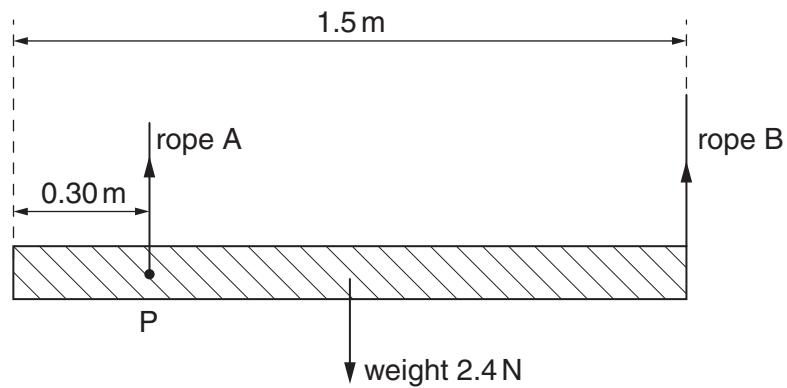


Fig. 2.2

Rope A is now at point P 0.30 m from one end of the rod and rope B is at the other end.

- (i) Calculate the tension in rope B.

tension in B = N [2]

- (ii) Calculate the tension in rope A.

tension in A = N [1]