3 A non-uniform bar AB makes an angle of 60° with a horizontal surface, as shown in Fig. 3.1.

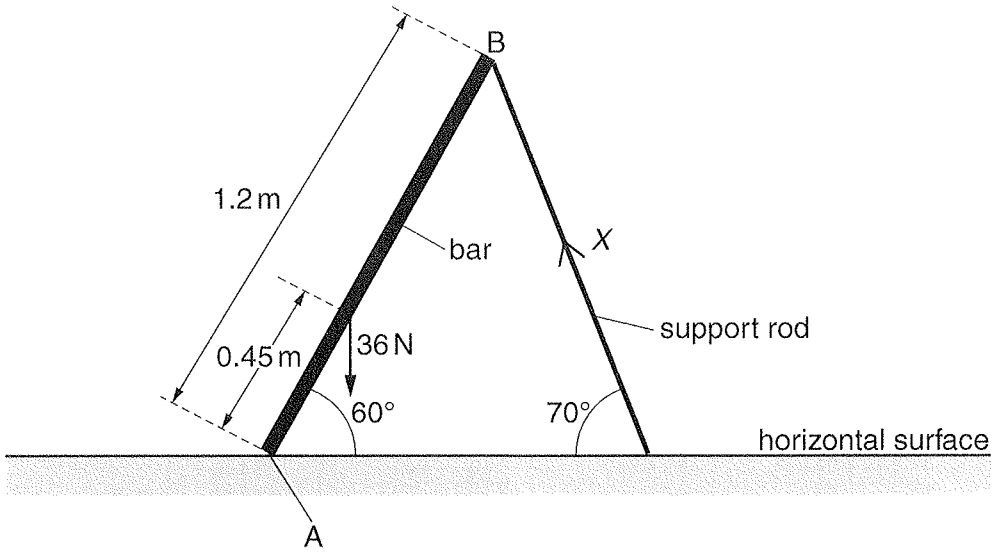

Fig. 3.1

The bar is hinged at A and is supported by a rod at B. The force *X* produced by the rod at B acts at an angle of 70° to the horizontal.
The bar has a length of 1.2 m and a weight of 36 N.
The centre of gravity of the bar is 0.45 m from A.

(a) Use the principle of moments to show that the magnitude of *X* is 8.8 N.

[2]

(b) A force *F* acts on the bar at A.

(i) Explain why a force is required to act on the bar at A to keep the bar in equilibrium.

.....

.....

.....

..... [2]

(ii) Calculate the magnitude of *F*.

F = ... N [3]

(iii) On Fig. 3.1, draw an arrow to show the approximate direction of *F*. [1]