

- 3 A uniform circular disc of radius R and weight W is in contact with a smooth horizontal ground and the corner of a box of height $\frac{R}{2}$, as shown in Fig. 3.1.

A horizontal force F acts at the centre O of the disc to keep the disc in equilibrium.

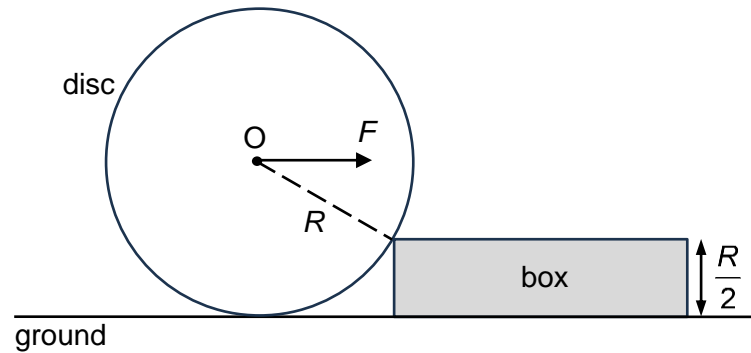


Fig. 3.1

- (a) Force F is increased until the disc is just about to rotate about the corner of the box. Use the principle of moments to determine the ratio $\frac{F}{W}$. Explain your working.

$$\frac{F}{W} = \dots\dots\dots [3]$$

- (b) The box is replaced with one of height R .

State and explain how the force F acting at the centre O would need to be changed for the disc to rotate about the corner of the box.

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 [2]