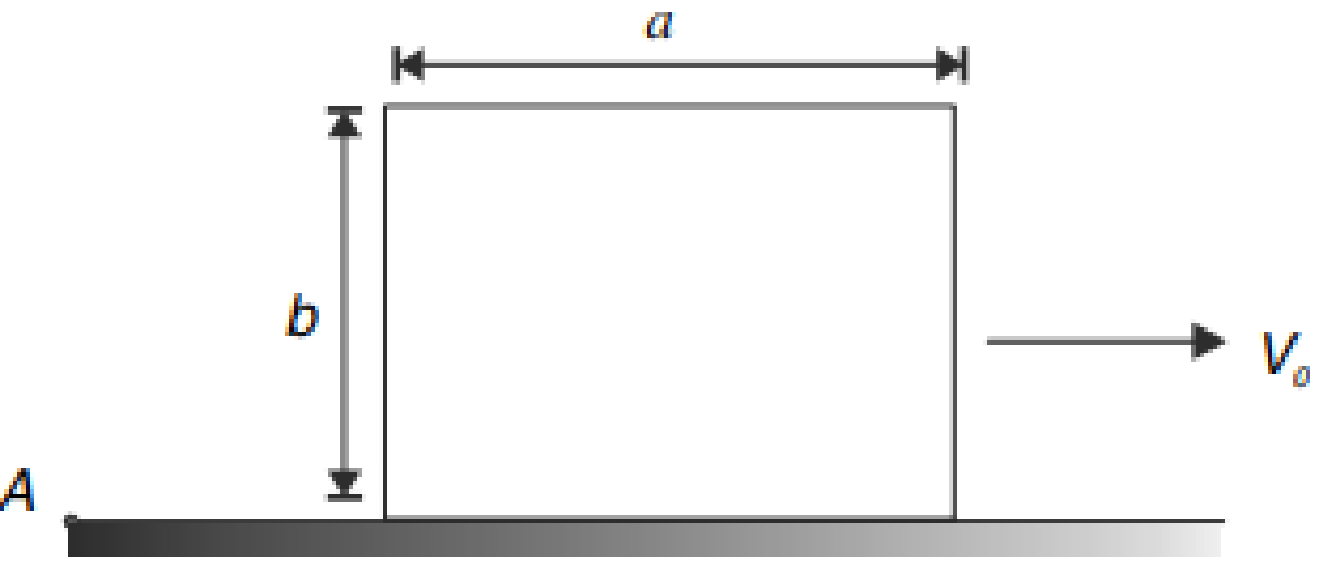
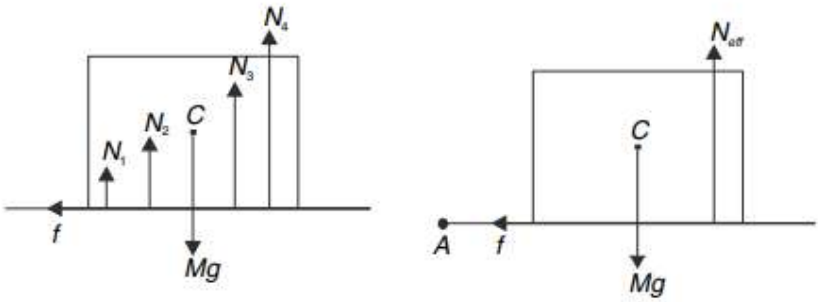
A uniform block of mass M and dimensions as shown in the figure is placed on a rough horizontal surface and given a velocity V_0 to the right. A is a point on the surface to the left of the block.

(a) Write the angular momentum of the block about point A just after it begins to move

(b) Due to friction the block stops. What happened to its angular momentum about point A? Which torque is responsible for change in angular momentum of the block?



(a) $L_A = MV_0 \dfrac{b}{2}$



(b) About the centre (C) of the block there is no rotation. Mg has no torque about C. Friction has a clockwise torque

about C. The torque of normal reaction balances this. The effective normal force is to the right of C. If you look about point A, N_{eff} has higher torque than torque due to Mg since distance of N_{eff} is greater

This produces an anticlockwise torque which eats away the angular momentum of the block