



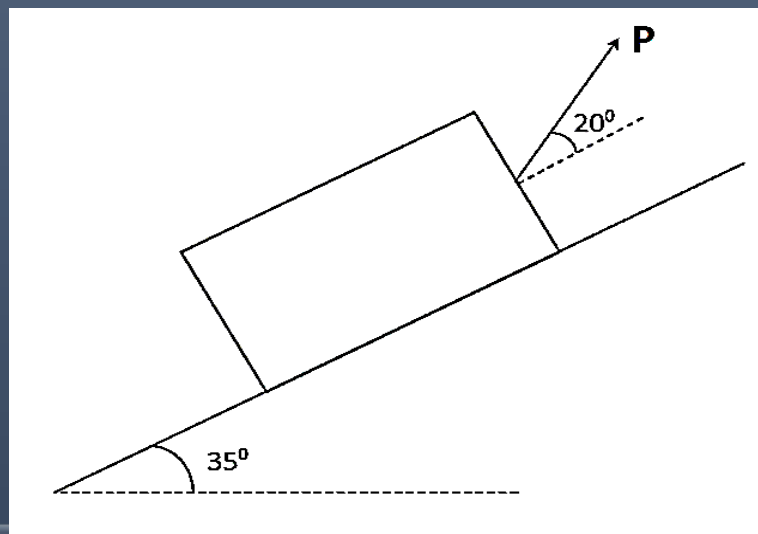
# TUTORIAL (Additional)



**MANIPAL INSTITUTE OF TECHNOLOGY**  
**MANIPAL**  
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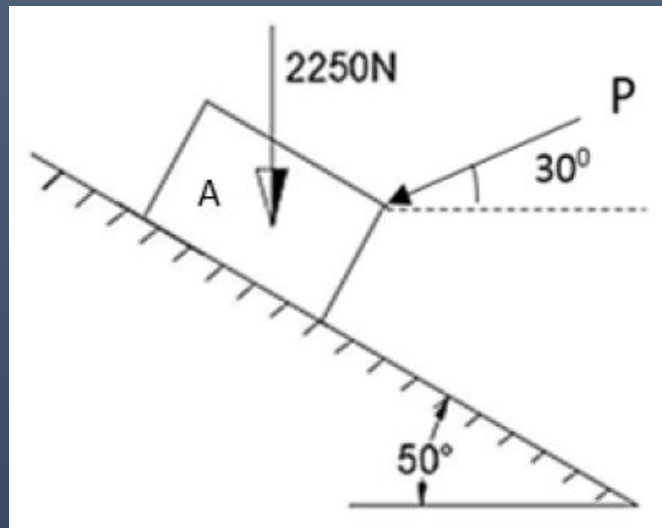


1. A block weighing 200 kN is resting on an inclined plane and is acted upon by force  $P$  as shown in the figure. If the coefficient of friction between the inclined plane and block is 0.3, calculate force  $P$  required to impend the block up the plane. (3 marks)



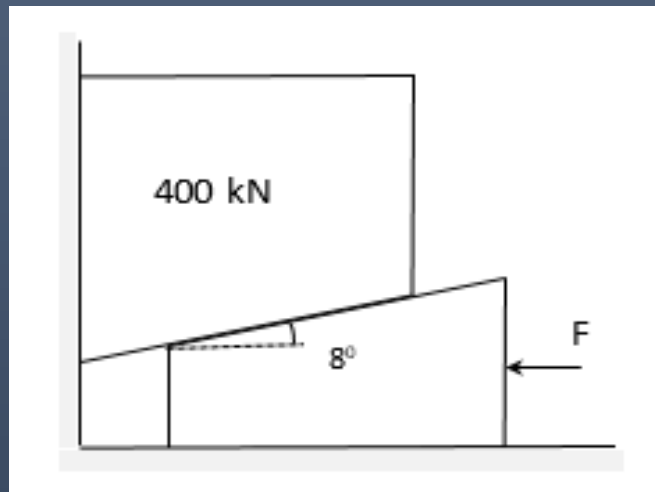


2. Block A shown in figure is in contact with  $50^\circ$  inclined plane. The coefficient of friction between plane and block is 0.25. Compute the value of force 'P' necessary to just prevent the motion of the block down the plane. (2 marks)

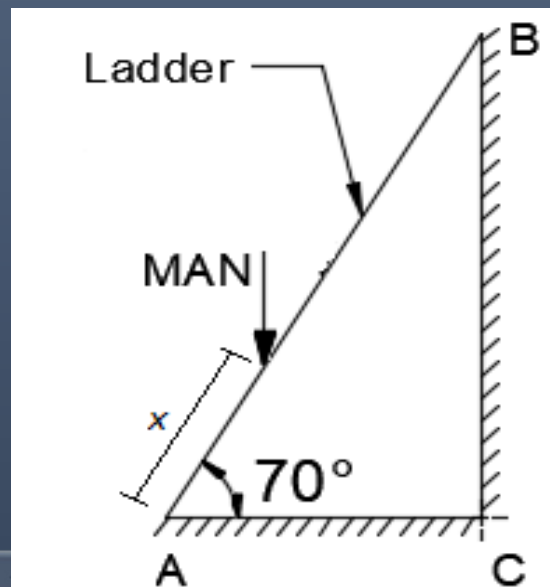




3. A block of weight 400 kN is lifted by a wedge as shown in the figure. Calculate force 'F' required to rise the block. Consider angle of limiting friction as  $19^\circ$  at all contact surfaces. (4 marks)



4. A man weighing 750 N starts to climb 7m long ladder weighing 250 N. Determine distance 'x' indicated in the figure when the ladder starts to slip. The coefficient of friction for all rubbing faces is 0.30. (3 marks)



5. Two blocks A and B are resting against a wall and the floor as shown in figure. Find the minimum value of horizontal force  $P$  applied to the resist the motion of the block A. Given coefficient of friction between all contact surfaces is 0.2.

