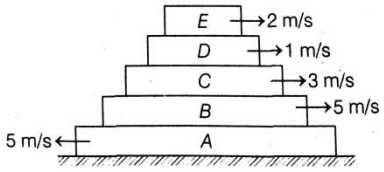
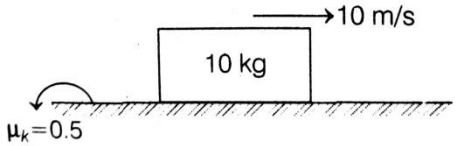
SUBJECT : **TOPIC: REVISION FRICTION** **TIME:**
DATE:

1. Find the direction of kinetic friction force
   (a) On the block, exerted by the ground,
   (b) On the ground, exerted by the block.

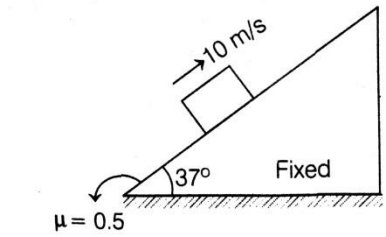
2. In the given diagram, find the direction of friction forces on each block and the ground (assume all surfaces are rough and all velocities are with respect to ground).



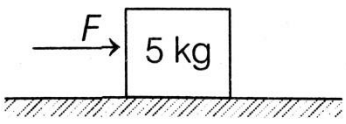
3. Find the distance travelled by the block shown in the figure before it stops.



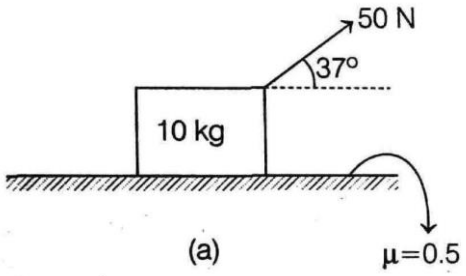
4. Initial velocity of the block is 10 m/s and coefficient of friction between the block and incline is $\mu = 0.5$.
   (a) Find the distance travelled by the block on incline before it stops.
   (b) Find the total time taken by the block to reach the initial position.



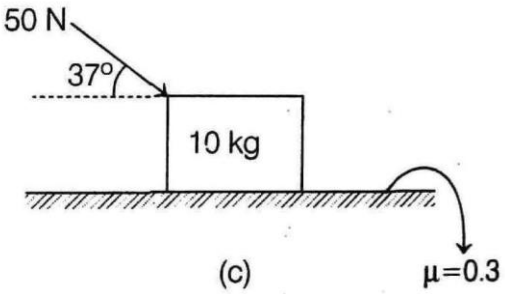
5. A horizontal force of 20 N is applied to a block of mass 4 kg resting on a rough horizontal table. If the block does not move on the table, how much frictional force the table is applying on the block? What can be said about the coefficient of static friction between the block and the table? (Take, g = 10 m/s^2)
6. A block of mass 5 kg is resting on a rough surface as shown in the figure. It is acted upon by a force F towards right. Find acceleration and frictional force acting on block when
   ($\mu_s = 0.6, \mu = 0.5$ *and* $g = 10\ m/s^2$)
   (a) F = 0 (b) F = 25 N (c) F = 30 N (d) F = 31N



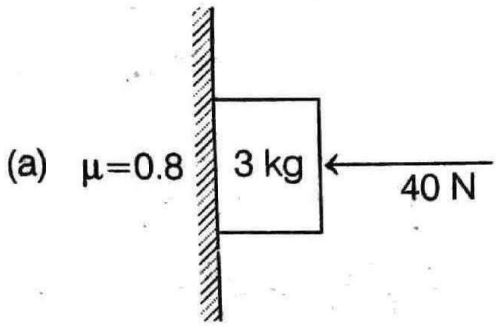
7. Find out acceleration of the block. Initially the block is at rest.



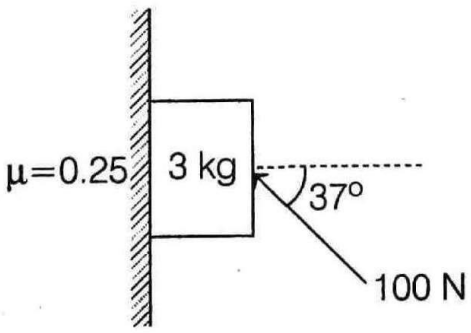
8. Find out acceleration of the block. Initially the block is at rest.



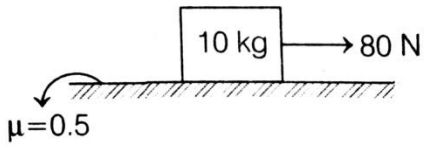
9. Consider a block pressed against a vertical wall as shown. Find the magnitude of acceleration of block.



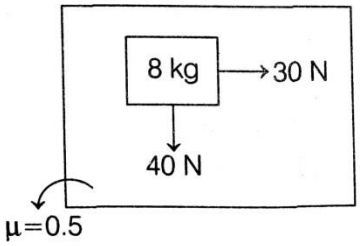
10. Consider a block pressed against a vertical wall as shown. Find the magnitude of acceleration of block.



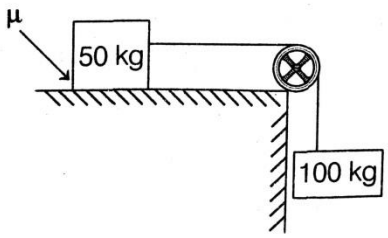
11. Find the minimum force that must be applied on the block vertically downwards, so that the block doesn't move.



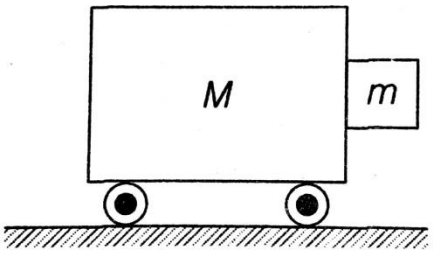
12. Top view of a block on a table is shown ($g = 10 m/s^2$). Find the acceleration of the block.



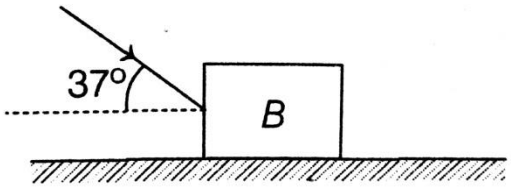
13. Find μ, so that the blocks remain stationary.



14. A cart of mass M has a block of mass m attached to it as shown in the figure. Coefficient of friction between the block and cart is μ. What is the minimum acceleration of the cart, so that the block m does not fall?



15. A block B slides with a constant speed on a rough horizontal floor acted upon by a force which is 1.5 times the weight of the block. The line of action of F makes 37° with the ground. Find the coefficient of friction between the block and the ground.

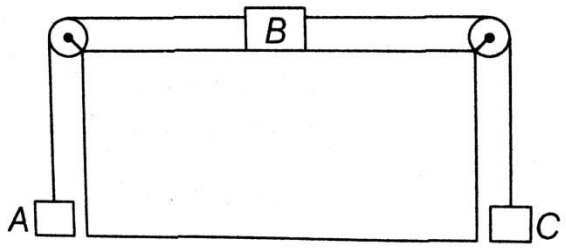


16. The coefficient of static friction between a block of mass m and an inclined plane is μ.
(a) What can be the maximum angle θ of the incline with the horizontal, so that the block does not slip on the plane?

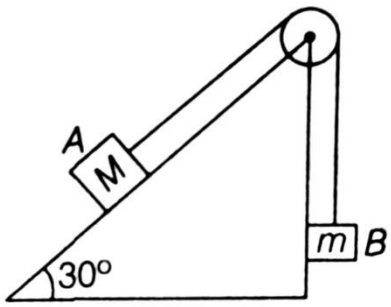
(b) If the incline makes an angle $\frac{\theta}{2}$ with the horizontal, find the friction force on the block.

17. A block of mass m is at rest on a rough inclined plane of inclination θ with horizontal. The coefficient of friction between block and inclined plane is μ. Find
(a) minimum force to applied on the block parallel to inclined plane, so that it just starts moving up,
(b) minimum force to be applied on the bloc parallel to inclined plane to prevent the block from slipping down the inclined plane
(c) and minimum force to be applied on the block perpendicular to the inclined plane to prevent the block from slipping down the inclined plane.

18. Block A has a mass of 2 kg and block B has 20 kg. If the coefficient of kinetic friction between block B and the horizontal surface is 0.1 and B is accelerating towards the right with a = 2 m/s^2, then find the mass of the block C.



19. Block A of mass M in the system shown in the figure slides down the incline at a constant speed. The coefficient of friction between block A and the surface is $\frac{1}{3\sqrt{3}}$. Find the mass of block B.



20. A uniform rope, so lies on a table that part of it lays over. The rope begins to slide when the length of hanging part is 25% of entire length. Find the coefficient of friction between rope and table.