Chapters (5 & 6)

1- A 70-kg man stands on a spring scale in an elevator that has a downward acceleration of 2.8 m/s**2. The scale will read: [490 N]

2- A person pulls a 50-kg box horizontally with a constant horizontal force of 200 N. If the coefficient of kinetic friction muk is 0.2 and the coefficient of static friction (mu_s) is 0.3. Find the acceleration of the box. [2 m/s**2]

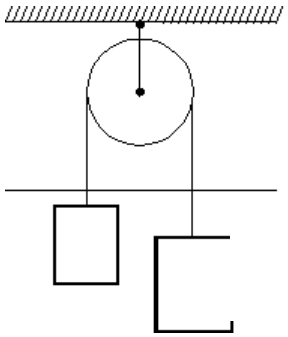
3- A block of mass M = 10 kg is pushed up along a 30 degree inclined plane with a force F parallel to the inclined plane. If the velocity of the block is constant and the coefficient of kinetic friction mu_k is 0.2, find the magnitude of the force. [66 N]

4- One end of a 1.0-m string is fixed; the other end is attached to a 2.0-kg stone. The stone swings in a vertical circle, and has a speed of 4.0 m/s at the top of the circle. The tension in the string at this point is approximately: [12 N]

5- A 3.5-kg block is pulled at constant velocity along a horizontal floor by a force F = 15 N that makes an angle of 40 degrees with the horizontal. Find the magnitude of the force of friction between the block and the floor. [11 N]

6- Find the minimum coefficient of static friction between the tyres of a car and a level road if the car is to make a circular turn of radius 90 m at a speed of 60 km/h. [0.315]

7- Two blocks are connected by a string and pulley as shown. Assuming that the string and pulley are massless, the magnitude of the acceleration of each block is: [0.98 m/s^2]



8- Block A, with a mass of 10 kg, rests on a 35° incline. The coefficient of static friction is 0.40. An attached string is parallel to the incline and passes over a massless, frictionless pulley at the top. What is the smallest mass m_B, attached to the dangling end, for which A remains at rest? [2.5 kg]