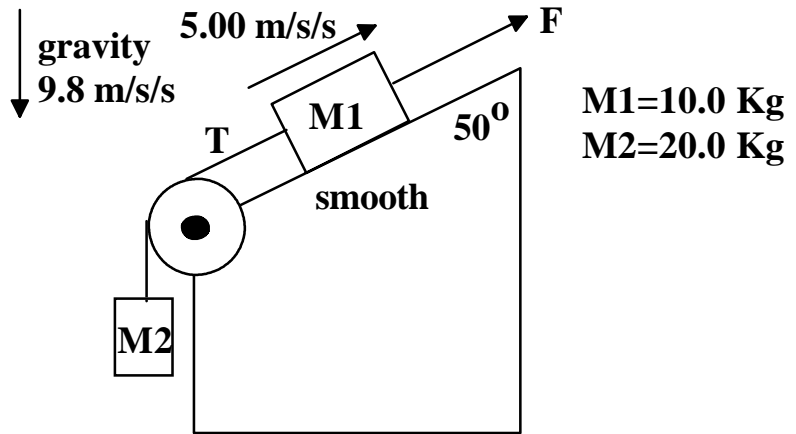


**PHY 1350
EXAM #2
FALL 1995**



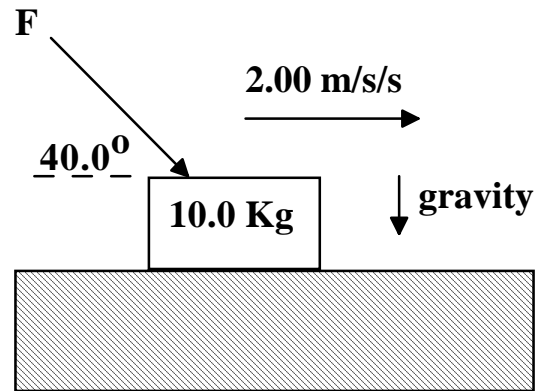
1.(a.) Draw a free body diagram for M_1 and M_2 assuming that the cord slips over the pulley without friction.

1.(b.) Write down Newton's Second Law for M_1 and M_2 in terms of known and unknown quantities.

1(c.) Determine the tension T assuming that both masses have the acceleration shown in the diagram.

1(d.) Determine the value of F .

2. A force, F , pushes on a block as shown in the diagram to the right. The coefficient of kinetic friction between block and plane is 0.250. The acceleration due to gravity is 9.8 m/s^2 .

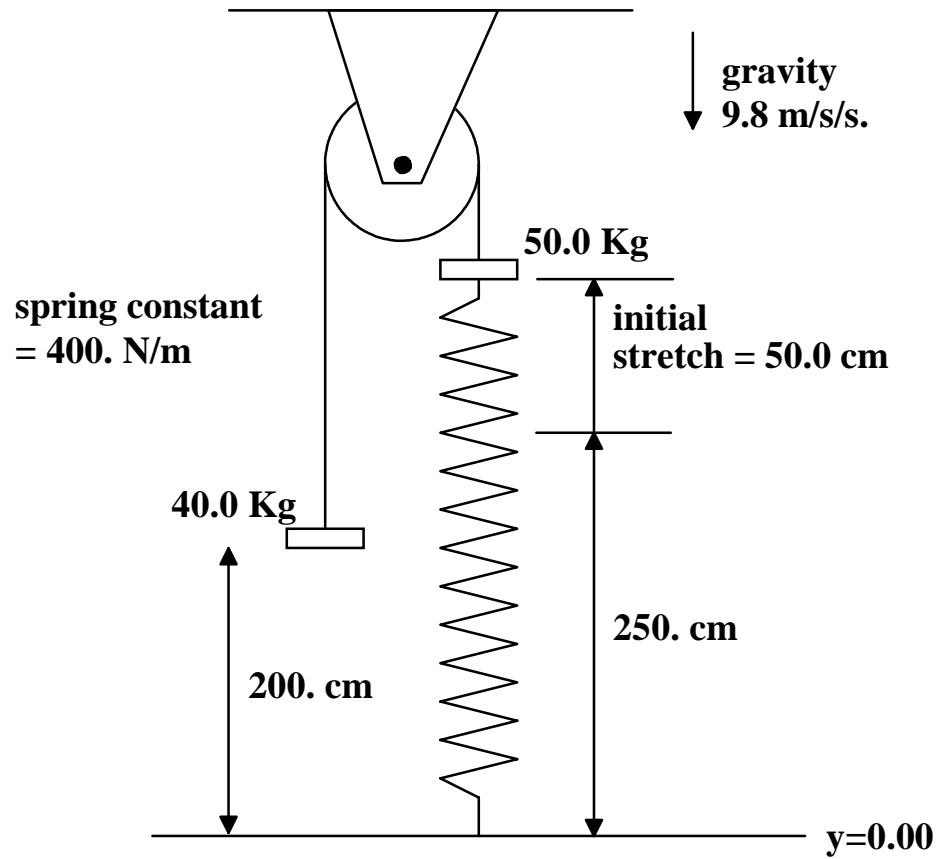


(a.) Draw a free body diagram for the mass.

2(b.) Write down Newton's Second Law equations for the mass.

2(c.) Determine the force, F , that is required to provide the indicated acceleration.

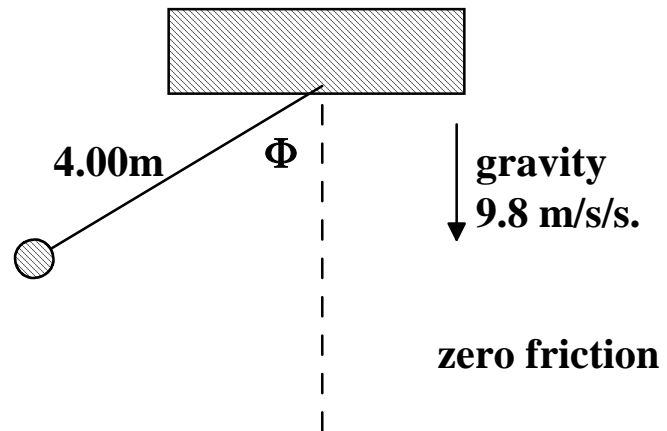
3.



(a.) Using the origin indicated, what is the total initial energy of the system consisting of the earth, the two masses and the spring?

(b.) Determine the maximum compression of the spring after the 50.0 Kg mass has fallen to its lowest position. Assume that the cord slides over the pulley with zero friction.

4. A 259 gram pendulum bob hangs from a cord attached to the ceiling. The distance from the cord's point of attachment at the ceiling to the center of the bob, is 4.00 meters. The bob is released from rest at an initial angle of 60.0 degrees from the vertical.



(a.) What is the bob's speed when the angle is 30.0 degrees?

(b.) What is the tension in the cord when the angle is 30.0 degrees?

(c.) What is the tangential acceleration of the bob when the angle is 30.0 degrees?