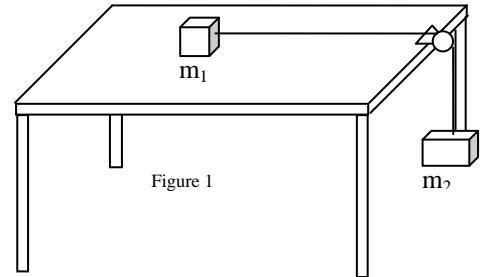


Two Object Force Practice Problems

1. A mass, $m_1 = 5.00$ kg, resting on a frictionless horizontal table is connected to a cable that passes over a pulley and then is fastened to a hanging mass, $m_2 = 10.00$ kg (see Figure 1). Find the acceleration of each mass and the tension in the cable.



2. Masses, $m_1 = 10$ kg and $m_2 = 5$ kg are connected by a light string that passes over a pulley as in Figure 1. If m_1 , initially held at rest on the table, falls 1.0 m in 1.2 seconds, determine the acceleration of the blocks, the tension in the string and the coefficient of friction between it and the table.
3. A steel block of mass $m_1 = 2.0$ kg rests on a steel table and is connected to a hanging block by a light cord over a frictionless pulley as shown in Figure 1. Weights are added to the hanging mass, m_2 , so that it is slowly increasing. What value of m_2 causes m_1 to begin moving if $\mu_s = 0.74$? How long does m_1 take to move 0.50 m along the table once it is moving at a constant rate ($\mu_k = 0.57$)?

4. Two objects of mass $m_1=10.0$ kg and $m_2=5.00$ kg are connected by a light string that passes over a frictionless pulley as in Figure 2. The 5.00 kg object lies on a smooth incline angle of 40° . Find the accelerations of each object and the tension in the string.

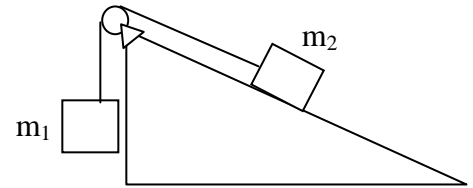


Figure 2

5. Two objects of mass $m_2= 5.0$ kg and $m_1=10.00$ kg are connected by a light string that passes over a frictionless pulley as in Figure 2. The incline is at an angle of 35° with the horizontal. The coefficient of friction between the object and the incline is 0.47. What is the acceleration of the two objects and the tension in the string?
6. Masses $m_1=4.00$ kg and $m_2=9.00$ kg are connected by a light string that passes over a frictionless pulley as shown in figure 2. m_1 is held at rest on the floor and m_2 rests on a fixed inclined of 40° . The masses are released from rest and m_2 slides 1.00 m down the incline in 4.00 s. Determine the coefficient of kinetic friction between m_2 and the incline, the acceleration of both objects and the tension in the string.