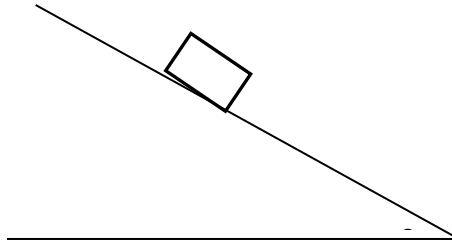


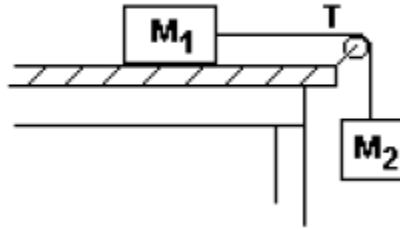
Forces Review

1.



A mass of 38.0 kg is placed on an incline with a 29.0° angle with the horizontal. The mass accelerates down the incline at 2.21 m/s^2 . Determine the coefficient of kinetic friction. ($\mu_k = 0.298$)

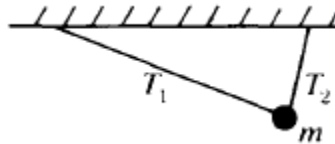
2.



Let $M_1 = 4.0 \text{ kg}$ and $M_2 = 8.0 \text{ kg}$. The coefficient of friction between the surface and M_1 is 0.20. Determine the acceleration of both masses. Assume the pulley is frictionless and the string is massless. ($a = 5.88 \text{ m/s}^2$)

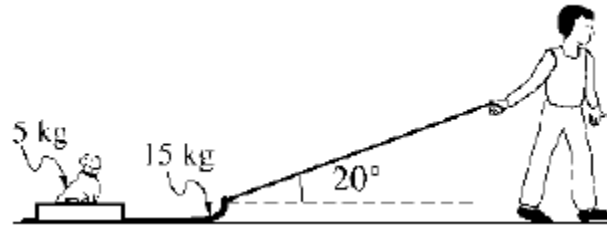
3. When empty, a particular helicopter of mass 5165 kg can accelerate straight upward at a maximum acceleration of 5.00 m/s^2 . A careless crewman overloads the helicopter so that it is just unable to lift off. What is the mass of the cargo? ($m_{\text{cargo}} = 2630 \text{ kg}$)

4.



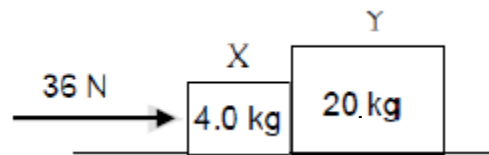
The tension in string 1 is 17.0 N. The angle between string 1 and the horizontal is 34.0° . The tension on string 2 is 45.6 N and its angle is 72.0° . What is the mass of m ? ($m = 5.40 \text{ kg}$)

5.



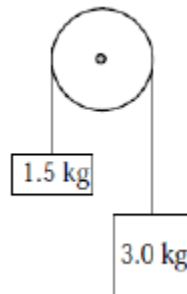
A child pulls a 15 kg sled containing a 5.0 kg dog along a straight path on a horizontal surface. He exerts a force of 55 N on the sled at an angle of 20° above the horizontal, as shown in the figure. The coefficient of friction between the sled and the surface is 0.22. Calculate the acceleration of the system. ($a = 0.65 \text{ m/s}^2$)

6.



Two masses, X and Y, are on a frictionless horizontal surface. A 36 N constant force is applied to X as shown above. What is the force exerted by X on Y? (30. N)

7.



A string with masses of 1.5 kg and 3.0 kg on its ends is hung over a frictionless, massless pulley as shown above. What is the acceleration of the masses? ($a = 3.3 \text{ m/s}^2$)