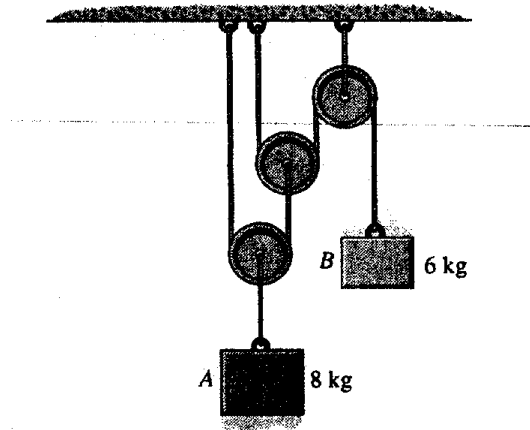
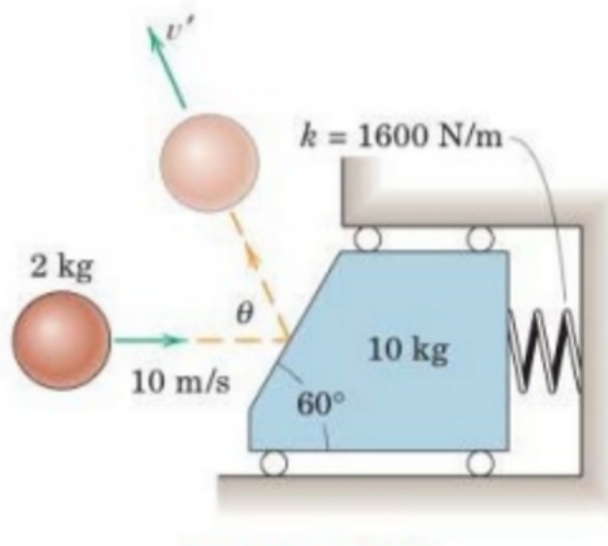


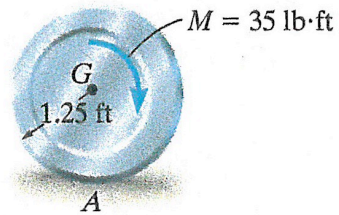
1. Determine the tension developed in the cords attached to each block and the accelerations of the blocks. Neglect the mass of the pulleys and cords.



2. A 2 kg sphere is projected horizontally with a velocity of 10 m/s against the 10 kg carriage, which is backed up by a spring with a stiffness of 1600 N/m. The carriage is initially at rest with the spring uncompressed. If the coefficient of restitution is 0.6, calculate the rebound velocity v' , the rebound angle θ and the maximum travel of the carriage δ .



3. The 50lb wheel shown has a radius of gyration $k_g = 0.70$ ft. If a 35-lb-ft couple is applied to the wheel, determine the acceleration of its mass center G . The coefficients of static and kinetic friction at A are $\mu_s = 0.3$ and $\mu_k = 0.25$ respectively.



4. The 10-kg rod shown is constrained so that its ends move in the horizontal and vertical slots. The spring has a stiffness $k = 800 \text{ N/m}$ and is unstretched when $\theta = 0$. Determine the angular velocity of AB when $\theta = 0$, if the rod is released from rest when $\theta = 30^\circ$. Neglect the mass of the sliders blocks.

