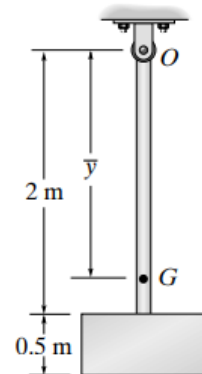


Upload a copy of your completed homework to uLearn AND turn in a physical copy in class.
For full credit, you must show your work at how you arrived at the answer

1. The pendulum is made from a 3kg slender rod and a 5 kg thin plater. If the location of the center of mass in the y direction is 1.78m, determine the moment of inertia of an axis that points through the center of mass at **G**. ans = 4.45 kg*m²



$$I_G = \Sigma \bar{I}_G + md^2$$

$$= \frac{1}{12} (3)(2)^2 + 3(1.781 - 1)^2 + \frac{1}{12} (5)(0.5^2 + 1^2) + 5(2.25 - 1.781)^2$$

$$= 4.45 \text{ kg} \cdot \text{m}^2$$

Ans.

2. A cart and load have a mass of 100 kg. Determine the acceleration of the cart and the normal reaction on the wheels (massless) at A and B. ans : $N_A = 430 \text{ N}$, $N_B = 611 \text{ N}$

$$\rightarrow \Sigma F_x = m(a_G)_x; 100\left(\frac{4}{5}\right) = 100a$$

$$a = 0.8 \text{ m/s}^2 \rightarrow$$

Ans.

$$+\uparrow \Sigma F_y = m(a_G)_y;$$

$$N_A + N_B - 100\left(\frac{3}{5}\right) - 100(9.81) = 0 \quad (1)$$

$$\zeta + \Sigma M_G = 0;$$

$$N_A(0.6) + 100\left(\frac{3}{5}\right)(0.7) - N_B(0.4) - 100\left(\frac{4}{5}\right)(0.7) = 0 \quad (2)$$

$$N_A = 430.4 \text{ N} = 430 \text{ N} \quad \text{Ans.}$$

$$N_B = 610.6 \text{ N} = 611 \text{ N} \quad \text{Ans.}$$

