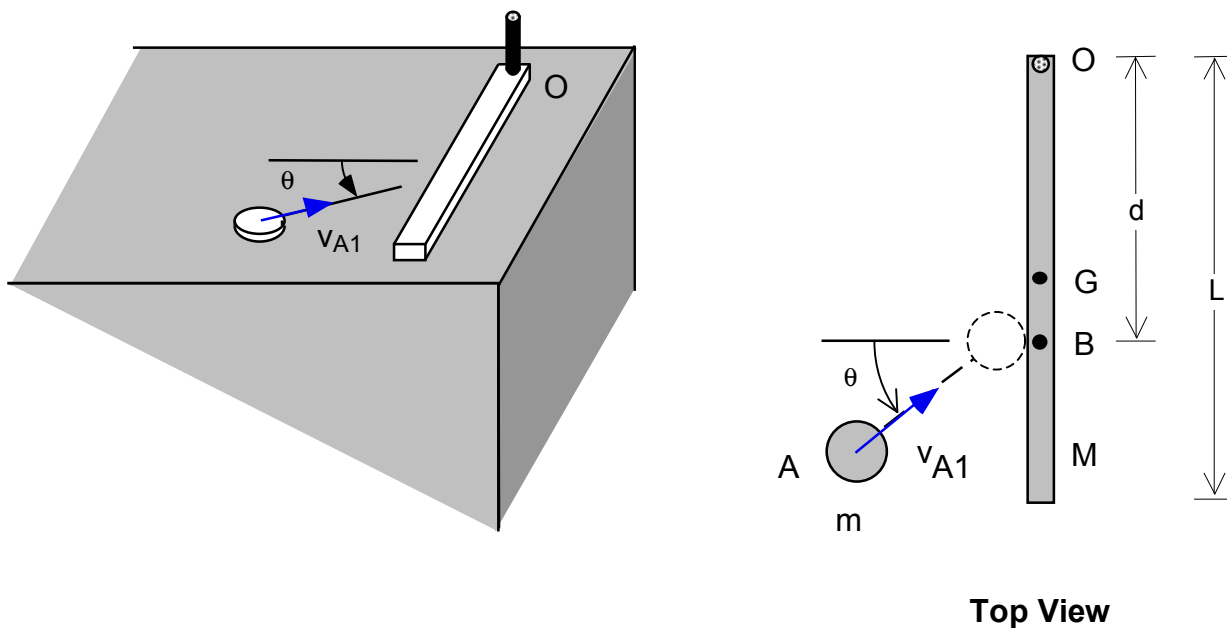


Homework H.5.L

Given: A thin homogeneous bar having a mass of M and length of L is pinned to ground at point O in such a way that the bar can rotate about O in a horizontal plane. Puck A , with a mass of m , strikes the bar at point B (located at a distance of d from the pin at O) with a speed of v_{A1} , with A initially moving in the direction shown below. The bar is at rest before being struck by the puck. Assume that the puck sticks to the bar after impact.

Find: Determine the angular velocity of the bar after the puck strikes the bar. Assume all surfaces to be smooth. Treat the puck as a particle.



Use the following parameters in your analysis: $M = 100$ kg, $m = 50$ kg, $L = 5$ m, $d = 3$ m, $v_{A1} = 30$ m/s and $\theta = 30^\circ$.