

Id (Problem 8-40 from Tipler's)

A wedge of mass M is placed on a frictionless, horizontal surface, and a block of mass m is placed on the wedge, which also has a frictionless surface (see the figure). The block's center of mass moves downward a distance h as the block slides from its initial position to the horizontal floor. What are the speeds of the block and of the wedge as they separate from each other and go their own ways?

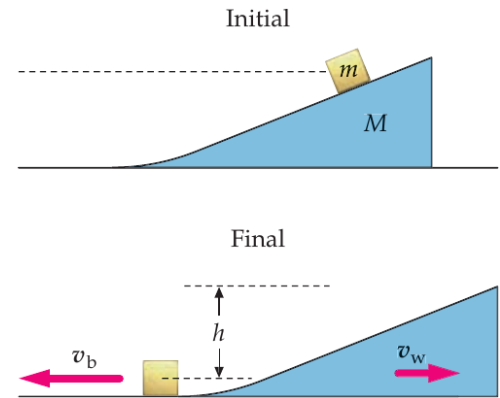


FIGURE 8-46 Problem 40

Ego (Problem 8-103 from Tipler's)

A 1.0-kg steel ball and a 2.0-m cord of negligible mass make up a simple pendulum that can pivot without friction about the point O , as in the figure. This pendulum is released from rest in a horizontal position, and when the ball is at its lowest point it strikes a 1.0-kg block sitting at rest on a shelf. Assume that the collision is perfectly elastic and that the coefficient of kinetic friction between the block and shelf is 0.10. (a) What is the velocity of the block just after impact? (b) How far does the block slide before coming to rest (assuming that the shelf is long enough)?

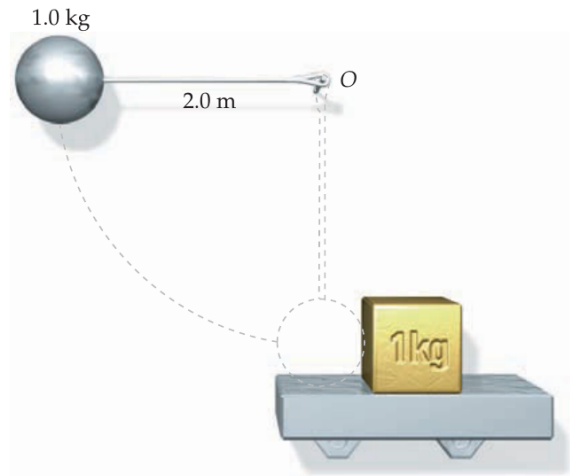


FIGURE 8-53 Problem 103

Superego (Problem 8-117 from Tipler's)

A dumbbell consisting of two balls of mass m connected by a massless 1.00-m-long rod rests on a frictionless floor against a frictionless wall with one ball directly above the other. The center-to-center distance between the balls is equal to 1.00 m. The dumbbell then begins to slide down the wall, as in the figure. Find the speed of the bottom ball at the moment when it equals the speed of the top ball.

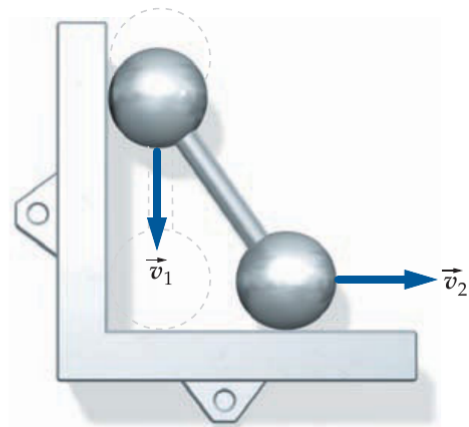


FIGURE 8-58 Problem 117