

Problem Set 8

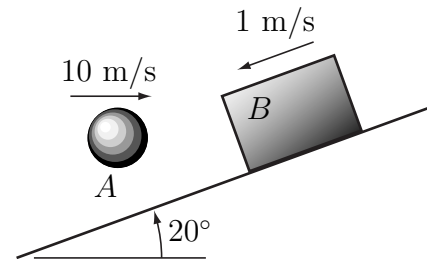
Due March 18, 1999

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Spring 1999

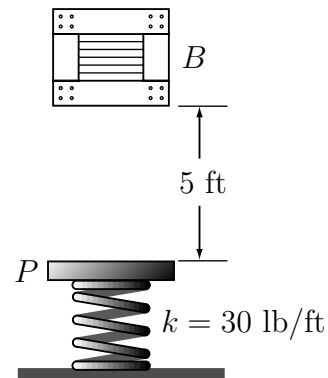
Problem 1

The 2 kg ball is thrown so that it is traveling horizontally at 10 m/s when it strikes the 6 kg block as it is traveling down the inclined plane at 1 m/s. If the coefficient of restitution between the ball and the block is $e = 0.6$, determine the speeds of the ball and the block just after the impact. In addition, what distance does B slide up the plane before it stops? The coefficient of kinetic friction between the block and the plane is $\mu_k = 0.4$.



Problem 2

The 5 lb box B is dropped from rest 5 ft above the top of the 10 lb plate P , which is supported by the spring having a stiffness of $k = 30$ lb/ft. If $e = 0.6$ between the box and plate, determine the maximum compression imparted to the spring. Neglect the mass of the spring.



Problem 3

The two billiard balls A and B are originally in contact with one another when a third ball C strikes each of them at the same time as shown. If ball C remains at rest after the collision, determine the coefficient of restitution. All the balls have the same mass. Neglect the size of each ball.

