

# HW #5 – Chapter 13

## PROBLEM 13.121



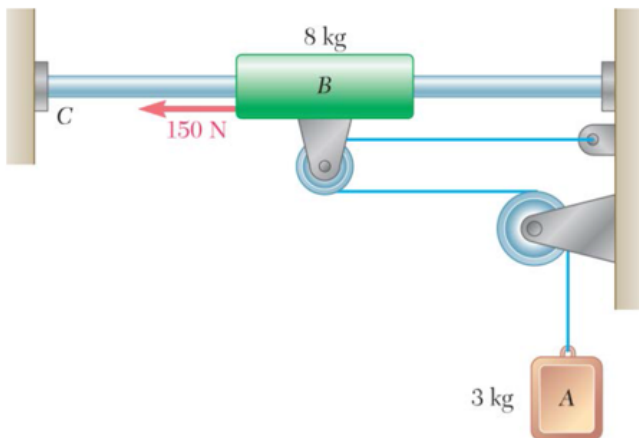
A sailboat weighing 980 lb with its occupants is running down wind at 8 mi/h when its spinnaker is raised to increase its speed. Determine the net force provided by the spinnaker over the 10-s interval that it takes for the boat to reach a speed of 12 mi/h.

## PROBLEM 13.124



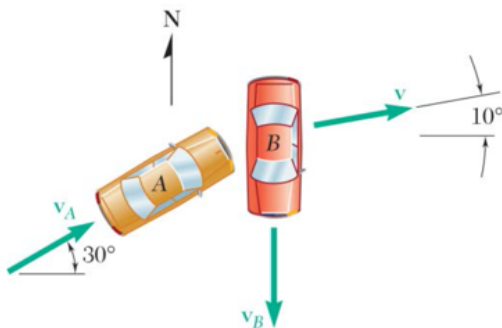
Steep safety ramps are built beside mountain highways to enable vehicles with defective brakes to stop. A 10-ton truck enters a  $15^\circ$  ramp at a high speed  $v_0 = 108$  ft/s and travels for 6 s before its speed is reduced to 36 ft/s. Assuming constant deceleration, determine (a) the magnitude of the braking force, (b) the additional time required for the truck to stop. Neglect air resistance and rolling resistance.

## PROBLEM 13.132



The system shown is at rest when a constant 150-N force is applied to collar  $B$ . Neglecting the effect of friction, determine (a) the time at which the velocity of collar  $B$  will be 2.5 m/s to the left, (b) the corresponding tension in the cable.

## PROBLEM 13.146



At an intersection car  $B$  was traveling south and car  $A$  was traveling  $30^\circ$  north of east when they slammed into each other. Upon investigation it was found that after the crash the two cars got stuck and skidded off at an angle of  $10^\circ$  north of east. Each driver claimed that he was going at the speed limit of 50 km/h and that he tried to slow down but couldn't avoid the crash because the other driver was going a lot faster. Knowing that the masses of cars  $A$  and  $B$  were 1500 kg and 1200 kg, respectively, determine (a) which car was going faster, (b) the speed of the faster of the two cars if the slower car was traveling at the speed limit.