

(From the course textbook 8th edition)

2. An object has a kinetic energy of 275 J and a momentum of magnitude  $25.0 \text{ kg} \cdot \text{m/s}$ . Find the speed and mass of the object.
5. **Q|C** A 65.0-kg boy and his 40.0-kg sister, both wearing roller blades, face each other at rest. The girl pushes the boy hard, sending him backward with velocity 2.90 m/s toward the west. Ignore friction. (a) Describe the subsequent motion of the girl. (b) How much potential energy in the girl's body is converted into mechanical energy of the boy-girl system? (c) Is the momentum of the boy-girl system conserved in the pushing-apart process? If so, explain how that is possible considering (d) there are large forces acting and (e) there is no motion beforehand and plenty of motion afterward.

11. An estimated force-time curve for a baseball struck by a bat is shown in Figure P9.11. From this curve, determine (a) the magnitude of the impulse delivered to the ball and (b) the average force exerted on the ball.

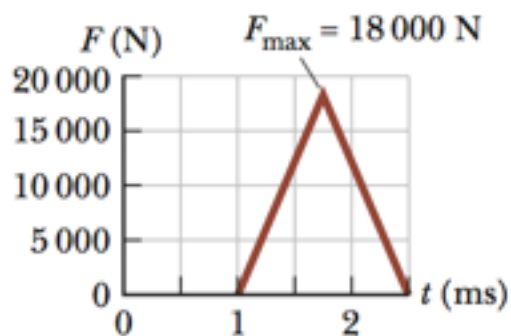


Figure P9.11

19. A 10.0-g bullet is fired into a stationary block of wood having mass  $m = 5.00 \text{ kg}$ . The bullet imbeds into the block. The speed of the bullet-plus-wood combination immediately after the collision is 0.600 m/s. What was the original speed of the bullet?