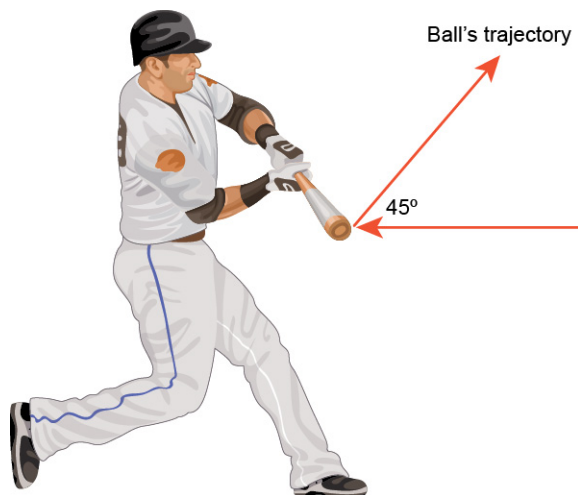


Problems

8.1 Linear Momentum, Force, and Impulse 16.



(credit: modification of work from Pinterest)

A 145-g baseball is incoming at a velocity of 35 m/s. The batter hits the ball as shown in the image. The outgoing baseball has a velocity of 40 m/s at the angle shown.

What is the magnitude of the x-component of the impulse?

- a. 0.26 kg m/s.
- b. 4.09 kg m/s.
- c. 4.35 kg m/s.
- d. 8.44 kg m/s.

17.

For how long should a force of 130 N be applied to an object of mass 50 kg to change its speed from 20 m/s to 60 m/s?

- a. 0.031 s
- b. 0.065 s
- c. 15.4 s
- d. 40 s

8.3 Elastic and Inelastic Collisions 18.

In an elastic collision, an object with momentum 25 kg m/s collides with another that has a momentum 35 kg m/s. The first object's momentum changes to 15 kg m/s. What is the momentum of the second object after the collision?

- a. 5 kg m/s

- b. 10 kg m/s
- c. 25 kg m/s
- d. 75 kg m/s

19.

Find the recoil velocity of a 65 kg ice hockey goalie who catches a 0.15 kg hockey puck slapped at him at a velocity of 50 m/s . Assume that the goalie is at rest before catching the puck, and friction between the ice and the puck-goalie system is negligible.

- a. -0.12 m/s
- b. 0 m/s
- c. 0.12 m/s
- d. 7.5 m/s