

Which of the following statements regarding linear momentum is correct?

- a. Momentum is always conserved.
 - b. Momentum is never conserved.
 - c. Momentum is only conserved for an isolated object. If objects interact, the momentum of the objects is never conserved.
 - d. Momentum is conserved only if there is no net external force.
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A 1.0-kg ball has a velocity of 12 m/s downward just before it strikes the ground and bounces up with a velocity of 12 m/s upward. What is the change in momentum of the ball?

- a. zero
- b. 12 kg·m/s, downward
- c. 12 kg·m/s, upward
- d. 24 kg·m/s, downward
- e. 24 kg·m/s, upward

Which one of the following is true concerning momentum?

- a. Momentum is a force.
- b. Momentum is a scalar quantity.
- c. The SI unit of momentum is $\text{kg}\cdot\text{m}^2/\text{s}$.
- d. The momentum of an object is always positive.
- e. Momentum and impulse are measured in the same units.

Padded dashboards in automobiles are safer because the...

- a. momentum change is less.
- b. impulse is less.
- c. impact time is less.
- d. impact time is greater.

A 0.1-kg steel ball is dropped straight down onto a hard horizontal floor and bounces straight up. Its speed just before *and just after* impact with the floor is 10 m/s. Determine the magnitude of the impulse delivered to the floor by the steel ball.

- a. zero
- b. 1 N·s
- c. 2 N·s
- d. 10 N·s
- e. 100 N·s

A stunt person jumps from the roof of a tall building, but no injury occurs because the person lands on a large, air-filled bag. Which one of the following best describes why no injury occurs?

- a. The bag provides the necessary force to stop the person.
- b. The bag reduces the impulse to the person.
- c. The bag increases the amount of time the force acts on the person and reduces the change in momentum.
- d. The bag decreases the amount of time during which the momentum is changing and reduces the average force on the person.
- e. The bag increases the amount of time during which the momentum is changing and reduces the average force on the person.