

## Review Questions on Momentum

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Which of the following has the largest momentum?
- a. a tightrope walker crossing Niagara Falls
  - b. a pickup truck speeding along a highway
  - c. a Mack truck parked in a parking lot
  - d. a dog running down the street
- \_\_\_\_\_ 2. A freight train rolls along a track with considerable momentum. If it rolls at the same speed but has twice as much mass, its momentum is
- a. zero
  - b. unchanged
  - c. doubled
  - d. quadrupled
- \_\_\_\_\_ 3. It is correct to say that impulse is equal to
- a. change in kinetic energy
  - b. the change in momentum
  - c. the force multiplied by the distance the force acts
  - d. velocity multiplied by time
- \_\_\_\_\_ 4. To catch a ball, a baseball player extends the hand forward before impact with the ball and then lets it ride backward in the direction of the ball's motion. Doing this reduces the force of impact on the player's hand principally because the
- a. force of impact is reduced
  - b. relative velocity is less
  - c. time of impact is decreased
  - d. time of impact is increased
- \_\_\_\_\_ 5. Padded dashboards in cars are safer in an accident than nonpadded ones because an occupant hitting the dash has
- a. increased time of impact
  - b. decreased time of impact
  - c. decreased impulse
  - d. increased momentum
- \_\_\_\_\_ 6. A 4 kg ball has a momentum of 12 kg m/s. What is the ball's speed?
- a. 3 m/s
  - b. 4 m/s
  - c. 12 m/s
  - d. 48 m/s
- \_\_\_\_\_ 7. A ball is moving at 3 m/s and has a momentum of 48 kg m/s. What is the ball's mass?
- a. 4 kg
  - b. 12 kg
  - c. 16 kg
  - d. 144 kg
- \_\_\_\_\_ 8. A 1000 kg car moving at 10 m/s brakes to a stop in 5 s. The average braking force is
- a. 1000 N
  - b. 2000 N
  - c. 3000 N
  - d. 4000 N
- \_\_\_\_\_ 9. You are driving down the highway and a bug spatters into your windshield. Which undergoes the greater change in momentum during the time of contact?
- a. the bug
  - b. your car
  - c. both the same

Name: \_\_\_\_\_

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- \_\_\_\_\_ 10. A golf ball moving at a speed of 4 m/s collides with a stationary bowling ball. The golf ball bounces backwards and the bowling ball moves slowly forward. Does the golf ball or bowling ball experience the greater change in momentum during the collision?
- a. both experience the same momentum change
  - b. golf ball
  - c. bowling ball
  - d. not enough information given
- \_\_\_\_\_ 11. A boy throws a small hard ball of mass 0.8 kg against a wall with a speed of 11 m/s, which strikes the wall and bounces back with the same speed. The ball is in contact with the wall for 0.05 s. What is the average force exerted on the wall by the ball?
- a. 13,200 N
  - b. 180 N
  - c. 350 N
  - d. 3500 N
- \_\_\_\_\_ 12. A 1000Kg car traveling with a speed of 25 m/s collides head on with a truck of mass 1500 kg with a speed of 20 m/s. Both vehicles stick together. What is their speed and direction after the collision?
- a. 22 m/s in direction of truck
  - b. 2 m/s in initial direction of truck
  - c. 2 m/s in initial direction of car
  - d. 0.2 m/s in direction of car