

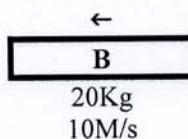
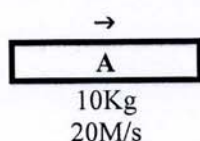
2016-17 Momentum Quiz**Multiple Choice**

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

- _____ 1. Suppose a girl is standing on a pond where there is no friction between her feet and the ice. In order to get off the ice, she can
- walk very slowly on tiptoe.
 - bend over touching the ice in front of her and then bring her feet to her hands.
 - get on her hands and knees and crawl off the ice.
 - throw something in the direction opposite to the way she wants to go.
 - all of the above will work
- _____ 2. The reason padded dashboards are used in cars is that they
- decrease the momentum of a collision.
 - increase the force of impact in a collision.
 - increase the time of impact in a collision.
 - decrease the impulse in a collision.
 - look nice and feel good.
- _____ 3. A small economy car (low mass) and a limousine (high mass) are pushed from rest across a parking lot, equal distances with equal forces. The car that receives the greater impulse is the
- small economy car.
 - limousine.
 - neither A nor B (same for each).
- _____ 4. When you jump off a step, you usually bend your knees as you reach the ground. By doing this, the time of the impact is about 10 times more what it would be in a stiff-legged landing, and the average force on your body is reduced by
- about 10 times.
 - less than 10 times.
 - more than 10 times.
- _____ 5. Suppose a cannon is made of a strong but very light material. Suppose also that the cannonball is more massive than the cannon itself. For such a system
- conservation of energy would not hold.
 - the target would be a safer place than where the operator is located.
 - conservation of momentum would not hold.
 - the force on the cannonball would be greater than the force on the cannon.
 - recoil problems would be lessened.
- _____ 6. Two objects, A and B, have the same size and shape, but A is twice as heavy as B. When they are dropped simultaneously from a tower, they reach the ground at the same time, but A has a higher
- speed.
 - acceleration.
 - momentum.
 - all of the above
 - none of the above

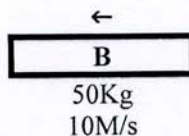
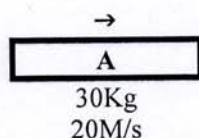
- ___ 7. Two gliders having the same mass and speed move toward each other on an air track and stick together. After the collision, the velocity of the gliders is
- zero.
 - the same as the original velocity.
 - one half the original velocity.
 - twice the original velocity.
 - There is not enough information to say.
- ___ 8. In order to catch a ball, a baseball player moves his or her hand backward in the direction of the ball's motion. Doing this reduces the force of impact on the player's hand principally because
- the time of impact is increased.
 - the momentum of impact is reduced.
 - the time of impact is decreased.
 - the velocity of the hand is reduced.
 - none of the above
- ___ 9. A table tennis ball launcher is fired. Compared to the force on the ball, the force on the launcher is
- the same.
 - larger.
 - smaller.
- ___ 10. A 10.0-kg chunk of putty moving at 9.0 m/s collides with and sticks to a 7.0-kg bowling ball that is initially at rest. The bowling ball with its putty passenger will then be set in motion with a momentum of
- 0 kg·m/s.
 - 19.0 kg·m/s.
 - 90.0 kg·m/s.
 - 0.9 kg·m/s.
 - more than 90.0 kg·m/s.
- ___ 11. Suppose an astronaut in outer space wishes to toss a ball against a very massive and perfectly elastic concrete wall and catch it as it bounces back. If the ball is as massive as the astronaut, then
- the astronaut will never catch the first bounce.
 - the astronaut will catch one bounce only.
 - the astronaut's time between catches will decrease as the game progresses.
 - none of the above
- ___ 12. Momentum of a system is conserved only when
- there are no forces acting on the system.
 - the system is not moving.
 - there are no internal forces acting on the system.
 - there is no net external force acting on the system.
 - the system has zero momentum.
- ___ 13. A freight train rolls along a track with considerable momentum. If it were to roll at the same speed but had twice as much mass, its momentum would be
- quadrupled.
 - unchanged.
 - doubled.
 - zero.

14. A moving freight car runs into an identical car at rest on the track. The cars couple together. Compared to the velocity of the first car before the collision, the velocity of the combined cars after the collision is
- More information is needed to say.
 - the same.
 - twice as large.
 - zero.
 - one half as large.
15. Compared to a sports car moving at 30 miles per hour, the same sports car moving at 60 miles per hour has
- four times as much momentum.
 - twice as much momentum.
 - the same momentum.
16. For the following inelastic collision; What is the velocity and direction of "B" after the collision?



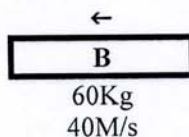
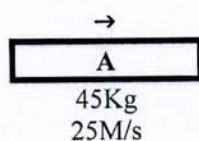
- 11.8 m/s to the Right
- 0.0 m/s Not moving
- 10.0 m/s to the Right
- 20.0 m/s to the Left
- 3.7 m/s to the Right

17. For the following inelastic collision; What is the velocity and direction of "A" after the collision?



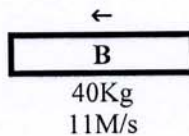
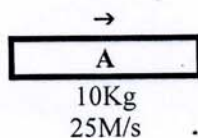
- 18.1 m/s to the Right
- 12.0 m/s to the Right
- 1.5 m/s to the Left
- 1.3 m/s to the Right
- 16.7 m/s to the Left

18. For the following elastic collision; What is the velocity and direction of "B" after the collision?



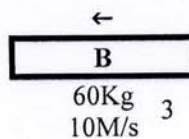
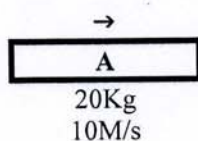
- 18.8 m/s to the Right
- 13.6 m/s to the Right
- 53.3 m/s to the Left
- 9.7 m/s to the Right
- 12.1 m/s to the Left

19. For the following elastic collision; What is the velocity and direction of "A" after the collision?



- 11.5 m/s to the Right
- 44.0 m/s to the Left
- 6.3 m/s to the Right
- 3.8 m/s to the Left
- 5.9 m/s to the Right

20. For the following elastic collision; What is the velocity and direction of "B" after the collision?



- 7.2 m/s to the Right
- 5.0 m/s to the Left
- 18.0 m/s to the Right
- 30.0 m/s to the Left
- 3.3 m/s to the Right