

8. Two shuffleboard disks of equal mass, one of which is orange and one of which is yellow, are involved in an elastic collision. The yellow disk is initially at rest and is struck by the orange disk, which is moving initially to the right at 5.00 m/s. After the collision, the orange disk is at rest. What is the velocity of the yellow disk after the collision?
- F. zero
G. 5.00 m/s to the left
H. 2.50 m/s to the right
J. 5.00 m/s to the right

Use the information below to answer questions 9–10.

A 0.400 kg bead slides on a straight frictionless wire and moves with a velocity of 3.50 cm/s to the right, as shown below. The bead collides elastically with a larger 0.600 kg bead that is initially at rest. After the collision, the smaller bead moves to the left with a velocity of 0.70 cm/s.



9. What is the large bead's velocity after the collision?
- A. 1.68 cm/s to the right
B. 1.87 cm/s to the right
C. 2.80 cm/s to the right
D. 3.97 cm/s to the right
10. What is the total kinetic energy of the system of beads after the collision?
- F. 1.40×10^{-4} J
G. 2.45×10^{-4} J
H. 4.70×10^{-4} J
J. 4.90×10^{-4} J

SHORT RESPONSE

11. Is momentum conserved when two objects with zero initial momentum push away from each other?
12. In which type of collision is kinetic energy conserved? What is an example of this type of collision?

Base your answers to questions 13–14 on the information below.

An 8.0 g bullet is fired into a 2.5 kg pendulum bob, which is initially at rest and becomes embedded in the bob. The pendulum then rises a vertical distance of 6.0 cm.

13. What was the initial speed of the bullet? Show your work.
14. What will be the kinetic energy of the pendulum when the pendulum swings back to its lowest point? Show your work.

EXTENDED RESPONSE

15. An engineer working on a space mission claims that if momentum concerns are taken into account, a spaceship will need far less fuel for the return trip than for the first half of the mission. Write a paragraph to explain and support this hypothesis.

Test TIP

Work out problems on scratch paper even if you are not asked to show your work. If you get an answer that is not one of the choices, go back and check your work.