

1. Value: 1

The product of force and the time it is exerted is the same as the product of a change in

- A. force and distance
- B. force and velocity
- C. mass and velocity
- D. mass and acceleration

2. Value: 1

With regard to an object's inertia and momentum at rest, it has

- A. no momentum but inertia
- B. momentum and no inertia
- C. both momentum and inertia
- D. no momentum and no inertia

3. Value: 1

An object experiences an unbalanced force of 75.0 N for a period of 1.30 s. What is the magnitude of its change in momentum?

- A. 44.4 kg•m/s
- B. 57.7 kg•m/s
- C. 97.5 kg•m/s
- D. 127 kg•m/s

4. Value: 1

A highway truck moving at 25.0 m/s misses a curve, hits a concrete obstruction, and stops in 0.500 m. If the driver has a mass of 80.0 kg, what average force must be exerted to stop her?

- A.  $1.60 \times 10^2$  N
- B.  $2.00 \times 10^3$  N
- C.  $5.00 \times 10^4$  N
- D.  $1.00 \times 10^5$  N

5.

Value: 1

In which collisions is momentum conserved?

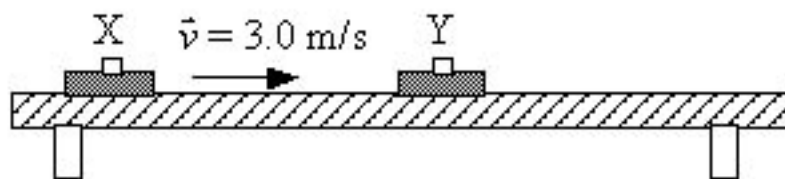
- A. All collisions
- B. Elastic collisions only
- C. Inelastic collisions only
- D. Neither elastic nor inelastic collisions

6.

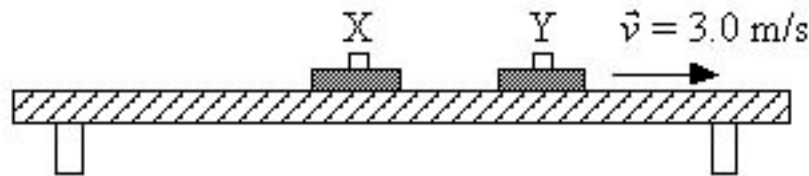
Value: 1

The diagrams show a one-dimensional collision between two air pucks (X and Y) of equal mass.

1. Before Collision



2. After Collision



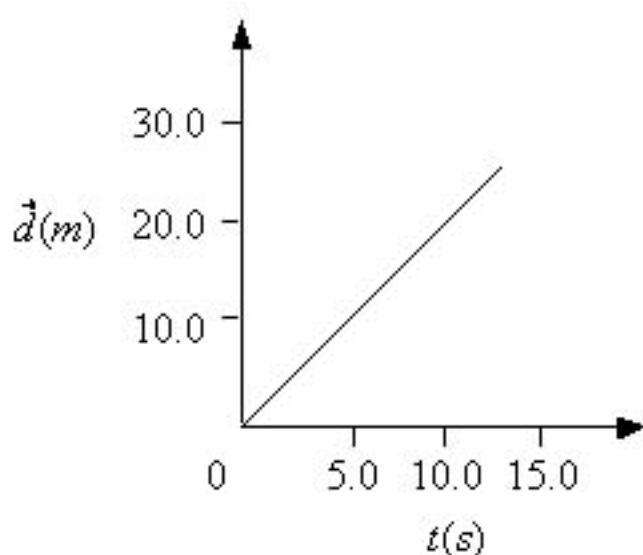
From these observations, what inference can be made?

- A. The two pucks have the same mass.
- B. Puck B is larger in size than Puck A.
- C. Puck A came to rest after the collision.
- D. In the collision, momentum is conserved.

7.

Value: 1

Some students drew this graph of the motion of a 250 g object.



At a time of 10.0 s, what is the object's momentum?

- A. 0.200 kg•m/s
- B. 0.500 kg•m/s
- C. 25.0 kg•m/s
- D. 50.0 kg•m/s

8.

Value: 1

An object has a momentum of 8.7 kg•m/s and a velocity of 2.1 m/s east. What is its mass?

- A. 2.1 kg
- B. 4.1 kg
- C. 11 kg
- D. 18 kg

9.

Value: 1

A 850 kg cart moving at +5.00 m/s hits a stationary 150 kg cart. If the two carts stick together, what is their velocity?

- A. -5.00 m/s
- B. -4.25 m/s
- C. +4.25 m/s
- D. +5.00 m/s

10.

Value: 1

A 45.0 kg object moving west at 12.0 m/s collides with a 15.0 kg object moving east at 23.0 m/s. After the collision, the 45.0 kg object moves west at 0.35 m/s. What is the velocity of the 15.0 kg object?

- A. 12.0 m/s east
- B. 12.0 m/s west
- C. 11.0 m/s east
- D. 10.7 m/s west