

# Momentum

## Question Paper

Course	CIE IGCSE Physics
Section	1. Motion, Forces & Energy
Topic	Momentum
Difficulty	Medium

Time Allowed	10
Score	/5
Percentage	/100

## Question 1

### Extended tier only

A rollercoaster speeds along a track with considerable momentum.

If a different rollercoaster travels at four times the speed but has half as much mass, its momentum is would be:

- A. Zero
- B. Twice as much
- C. Four times as much
- D. Unchanged

[1 mark]

## Question 2

### Extended tier only

A bullet is shot from a gun. The bullet moves forward and the gun moves in the opposite direction. Which of the following statements is true?

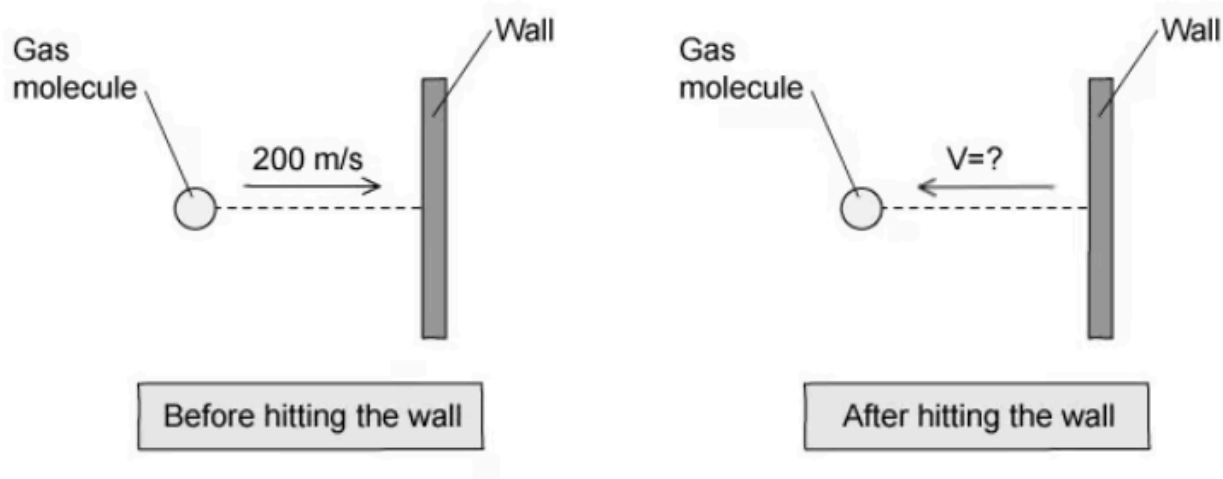
- A. They move with the same velocity in opposite directions.
- B. The bullet moves with a slower velocity due to its mass.
- C. The total momentum of the system is zero.
- D. The total momentum of the system does not stay constant before and after the collision.

[1 mark]

### Question 3

#### Extended tier only

A gas molecule strikes the wall of a container with a speed of  $200\text{ m/s}$ . It rebounds with the same kinetic energy as it had before striking the wall.



What is its final velocity?

- A.  $100\text{ m/s}$
- B.  $-100\text{ m/s}$
- C.  $200\text{ m/s}$
- D.  $-200\text{ m/s}$

[1 mark]

## Question 4

### Extended tier only

Padded dashboards in cars are safer in an accident than non-padded ones because a passenger hitting the dashboard would experience

- A. Lengthened time of contact
- B. Shorter time of contact
- C. Decreased impulse
- D. Increased momentum

[1 mark]

## Question 5

### Extended tier only

After a car crash the car driver's airbag inflates. The airbag then deflates when it is hit by the driver's head.

How does an airbag reduce the risk of injury?

- A. Collision time increases, which increases the rate of change of momentum.
- B. Collision time increases, which reduces the rate of change of momentum.
- C. Collision time decreases, which increases the rate of change of momentum.
- D. Collision time decreases, which reduces the rate of change of momentum.

[1 mark]