

Assignment: Inertia

1 A 12.0-kilogram cart is moving at a speed of 0.25 meter per second. After the speed of the cart is tripled, the inertia of the cart will be

(A) unchanged (B) one-third as great (C) three times greater (D) nine times greater

2 The data table below lists the mass and speed of four different objects.

Object	Mass (kg)	Speed (m/s)
A	2.0	6.0
B	4.0	5.0
C	6.0	4.0
D	8.0	2.0

Which object has the greatest inertia?

(A) A (B) B (C) C (D) D

3 A 15-kilogram cart is at rest on a horizontal surface. A 5-kilogram box is placed in the cart. Compared to the mass and inertia of the cart, the cart-box system has

(A) more mass and more inertia (C) the same mass and more inertia
(B) more mass and the same inertia (D) less mass and more inertia

4 Which object has the greatest inertia?

(A) a 0.010-kg bullet traveling at 90. m/s (C) a 490-kg elephant walking with a speed of 1.0 m/s
(B) a 30.-kg child traveling at 10. m/s on her bike (D) a 1500-kg car at rest in a parking lot

5 The data table below lists the mass and speed of four different objects.

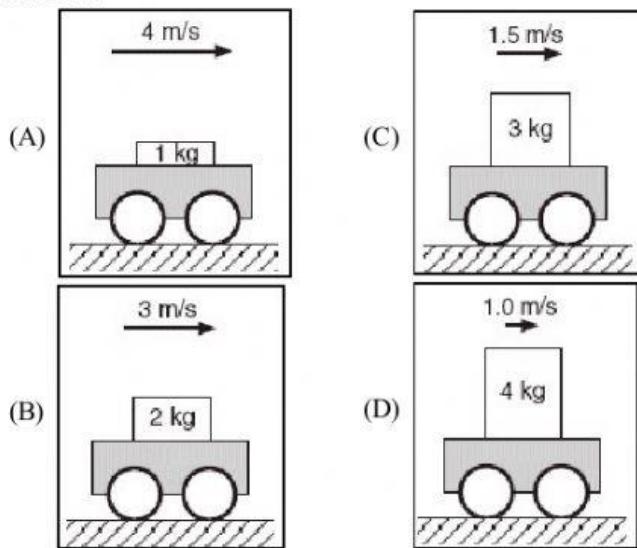
Data Table

Object	Mass (kg)	Speed (m/s)
A	4.0	6.0
B	6.0	5.0
C	8.0	3.0
D	16.0	1.5

Which object has the greatest inertia?

(A) A (B) B (C) C (D) D

6 A lab cart is loaded with different masses and moved at various velocities. Which diagram shows the cart-mass system with the greatest inertia?



7 Which person has the greatest inertia?

(A) a 110-kg wrestler resting on a mat (C) a 70-kg long-distance runner traveling at 5 m/s
(B) a 90-kg man walking at 2 m/s (D) a 50-kg girl sprinting at 10 m/s