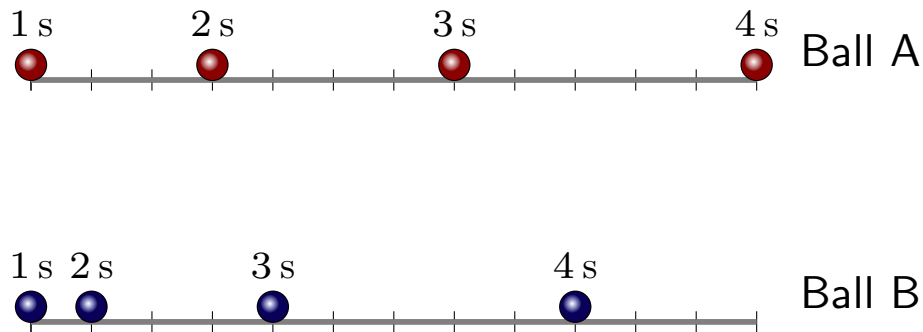


# Question 1

Two identical balls slide along horizontal surfaces. The positions of the balls are recorded at intervals spaced 1 s apart. These are illustrated in the diagram.

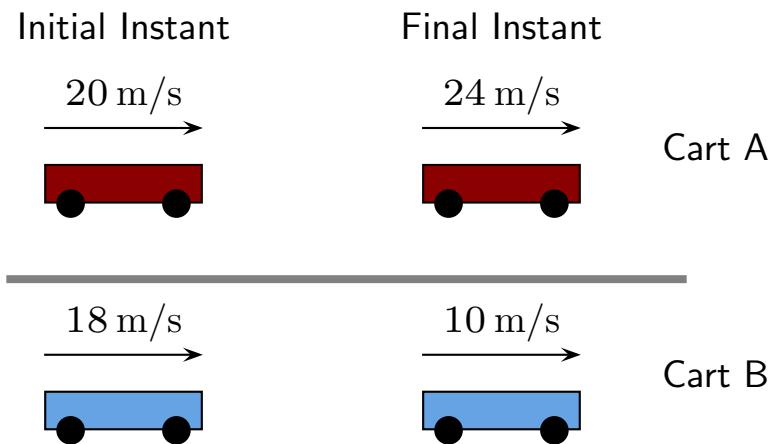


In the interval between 1 s and 4 s, which of the following is true?

1. The net force on each ball is zero.
2. The net force on ball A is the same as that on ball B but not zero.
3. The net force on ball A is smaller than that on ball B
4. The net force on ball A is larger than that on ball B

## Question 2

Various carts slide along tracks and their speeds at two times separated by 2 s are as indicated.

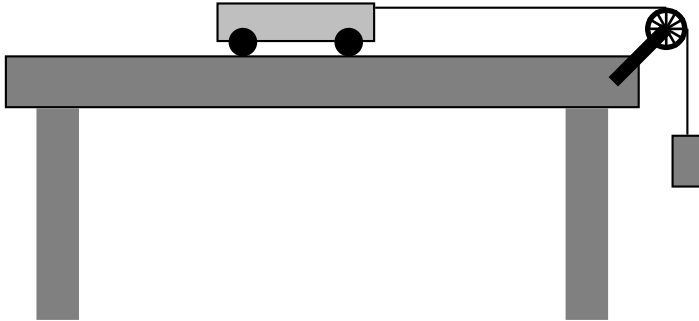


Which of the following is true regarding the accelerations?

1.  $12 \text{ m/s}^2$  for A;  $5 \text{ m/s}^2$  for B.
2.  $12 \text{ m/s}^2$  for A;  $-5 \text{ m/s}^2$  for B.
3.  $10 \text{ m/s}^2$  for A;  $9 \text{ m/s}^2$  for B.
4.  $4 \text{ m/s}^2$  for A;  $8 \text{ m/s}^2$  for B.
5.  $2 \text{ m/s}^2$  for A;  $4 \text{ m/s}^2$  for B.
6.  $2 \text{ m/s}^2$  for A;  $-4 \text{ m/s}^2$  for B.

## Question 3

A cart can slide back and forth along a frictionless track. A string is attached to the cart and a mass is suspended from this. The cart is given a brief initial push and starts moving left. The cart slows down and reverses direction, moving right.



Which of the following is true?

1. There is no force on the cart throughout the motion.
2. As the cart reverses its speed drops to zero and the force drops to zero.
3. As the cart reverses its speed drops to zero and the force never drops to zero.
4. There is always a force on the cart and so its speed is never zero.