Question 1

A man is observed while moving and his velocities at various instants are listed below:

Time	Velocity
$0.0\,\text{s}$	$-6.0\,\text{m/s}$
$1.0\,\text{s}$	$-4.0\,\text{m/s}$
$2.0\,\text{s}$	$-2.0\,\text{m/s}$
$3.0\,\text{s}$	$0.0\,\text{m/s}$
$4.0\,\text{s}$	$2.0\,\text{m/s}$
$5.0\,\text{s}$	$4.0\,\text{m/s}$

Which of the following is the average acceleration from $3.0\,\text{s}$ to $4.0\,\text{s}$?

1. $\overline{a} = 0.0\,\text{m/s}^2$

2. $\overline{a} = 0.5\,\text{m/s}^2$

3. $\overline{a} = 1.0\,\text{m/s}^2$

4. $\overline{a} = 2.0\,\text{m/s}^2$

5. $\overline{a} = 4.0\,\text{m/s}^2$

Question 2

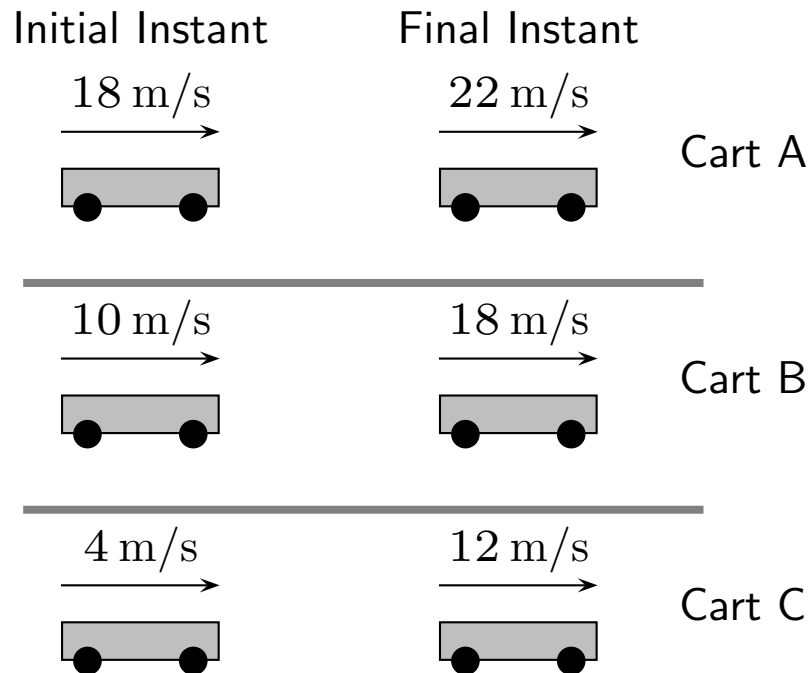A man is observed while moving and his velocities at various instants are listed below:

Time	Velocity
$0.0\,\mathrm{s}$	$-6.0\,\mathrm{m/s}$
$1.0\,\mathrm{s}$	$-4.0\,\mathrm{m/s}$
$2.0\,\mathrm{s}$	$-2.0\,\mathrm{m/s}$
$3.0\,\mathrm{s}$	$0.0\,\mathrm{m/s}$
$4.0\,\mathrm{s}$	$2.0\,\mathrm{m/s}$
$5.0\,\mathrm{s}$	$4.0\,\mathrm{m/s}$

Which of the following is the average acceleration from $0.0\,\mathrm{s}$ to $1.0\,\mathrm{s}$?

1. $\overline{a} = -6.0\,\mathrm{m/s}^2$

2. $\overline{a} = -4.0\,\mathrm{m/s}^2$

3. $\overline{a} = -2.0\,\mathrm{m/s}^2$

4. $\overline{a} = +2.0\,\mathrm{m/s}^2$

5. $\overline{a} = +4.0\,\mathrm{m/s}^2$

Question 3

Various carts slide along tracks and their speeds at two instants separated by $2.0\,\mathrm{s}$ are as indicated.

Initial Instant   Final Instant

$18\,\mathrm{m/s}$ $22\,\mathrm{m/s}$ Cart A

$10\,\mathrm{m/s}$ $18\,\mathrm{m/s}$ Cart B

$4\,\mathrm{m/s}$ $12\,\mathrm{m/s}$ Cart C

Which of the following is true regarding the size of the accelerations?

1. Same for all.

2. A smallest, C middle, B largest

3. C smallest, B middle, A largest

4. B and C same, A larger.

5. B and C same, A smaller.

Question 4

A hockey puck slides with constant speed to the right. It hits a magic rubber board, instantly reverses direction and returns at the same speed.

Which of the following is true of the average acceleration of the puck from a moment before it hits the board until a moment after it hits the board?

1. $\overline{a} < 0$

2. $\overline{a} = 0$

3. $\overline{a} > 0$

Question 5

A cart slides to the right with constantly decreasing *speed*.

Which of the following is true?

1. The average acceleration is positive.

2. The average acceleration is negative.

3. The average acceleration is negative if the cart is right of the origin but positive if it is left of the origin.

4. The average acceleration is negative if the cart is left of the origin but positive if it is right of the origin.

5. The average acceleration is zero.

Question 6

A cart slides to the left with constantly increasing *speed.*

Which of the following is true?

1. The average acceleration is positive.

2. The average acceleration is negative.

3. The average acceleration is negative if the cart is right of the origin but positive if it is left of the origin.

4. The average acceleration is negative if the cart is left of the origin but positive if it is right of the origin.

5. The average acceleration is zero.