

Read 2.5

H.W #1 Due today midnight

H.W #2 available

Clickers count today  
(AC)

Group tomorrow

TA will assign groups of 4  
people to work together

11)  $D * y / (10 * a)$

12)  $\text{sgt}(x * d / (3 * b))$

## Interactive Question

Which of the following is true?

- A) An object with negative acceleration is always slowing down.
- B) An object with positive acceleration is always speeding up.
- C) An object moving in the negative direction with negative acceleration is speeding up.
- D) An object moving in the negative direction with positive acceleration is speeding up.
- E) None of the above are true.

C

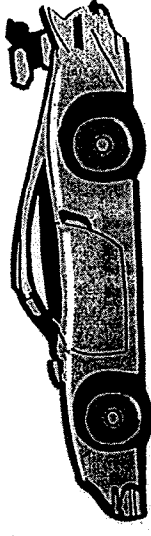
Problem: A sports car can accelerate at an average rate of  $4.5 \text{ m/s}^2$ . It starts at rest and accelerates in the negative  $\times$  direction. After 8.0 seconds what is its velocity?

Given:

$$v_i = 0 \text{ m/s}$$

$$a = -4.5 \text{ m/s}^2$$

$$t = 8 \text{ s}$$



Want:

$$\underline{v_f}$$

$$a = \frac{v_f - v_i}{t}$$

$$t a = v_f - v_i$$

$$v_f = v_i + t a$$

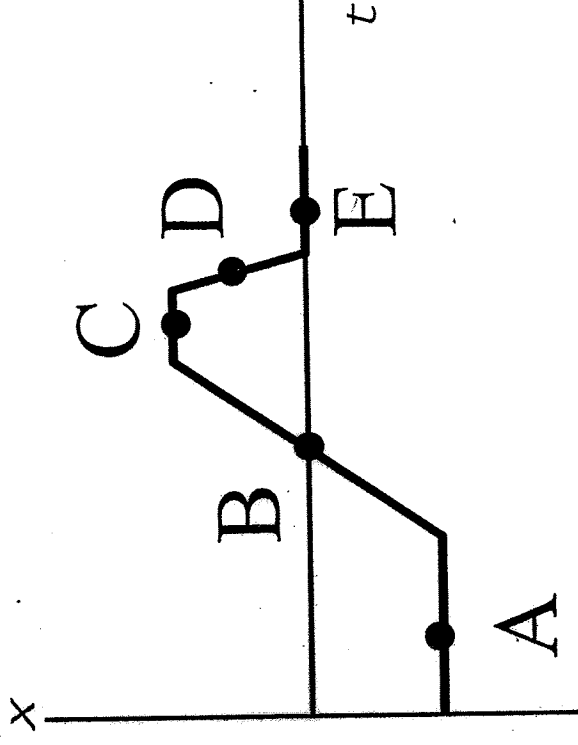
$$v_f = 0 \text{ m/s} + (8 \text{ s})(-4.5 \text{ m/s}^2)$$

$$\boxed{v_f = -36 \text{ m/s}}$$

## Interactive Question

Consider the plot of  $x$  vs  $t$  at the right, at which point(s) is the motion slowest?

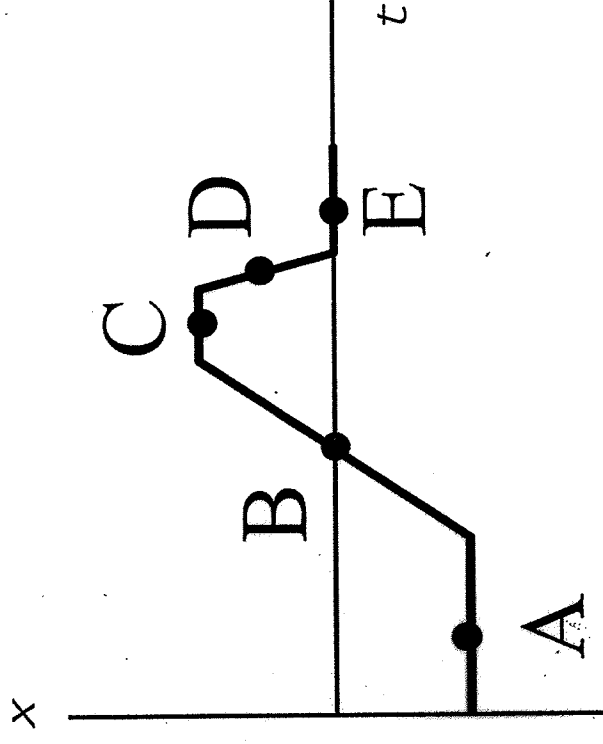
- A) A
- B) B
- C) D
- D) E
- E) More than one of the above answers



E

## Interactive Question

Consider the plot of  $x$  vs  $t$  at the right, at which point(s) is the object moving at a constant non-zero velocity?



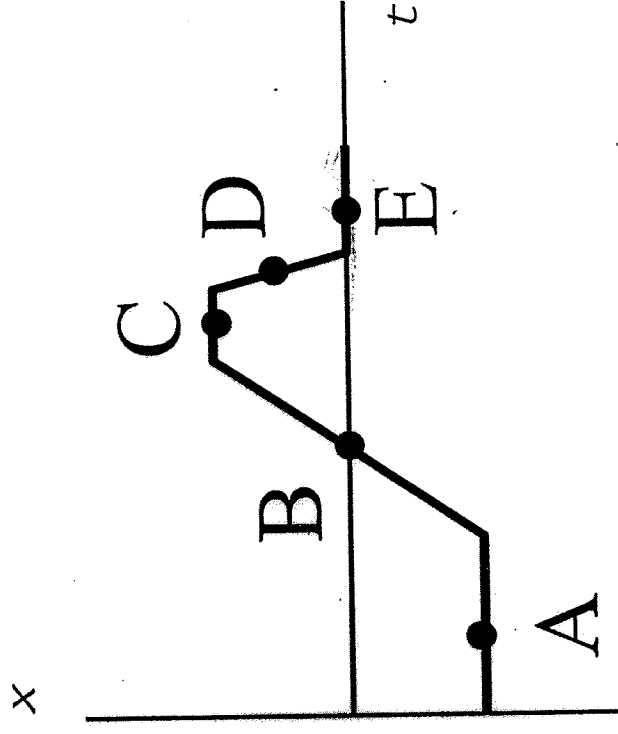
- A) A and C
- B) A, C and D
- C) C only
- D) D only
- E) B and D

**E**

## Interactive Question

Consider the plot of  $x$  vs  $t$  at the right, at which point(s) is the object moving in the negative  $x$  direction?

- A) A
- B) B
- C) C
- D) D
- E) E

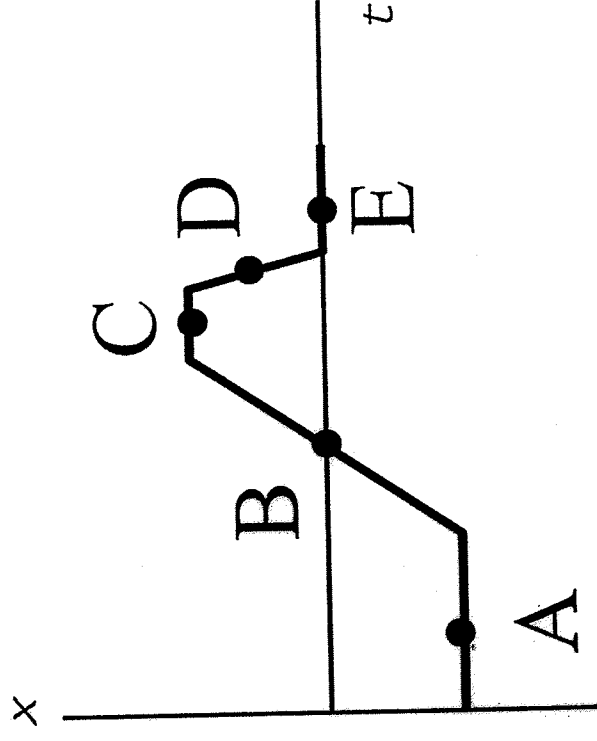


**D**

## Interactive Question

Consider the plot of  $x$  vs  $t$  at the right, at which point(s) is the object turning around?

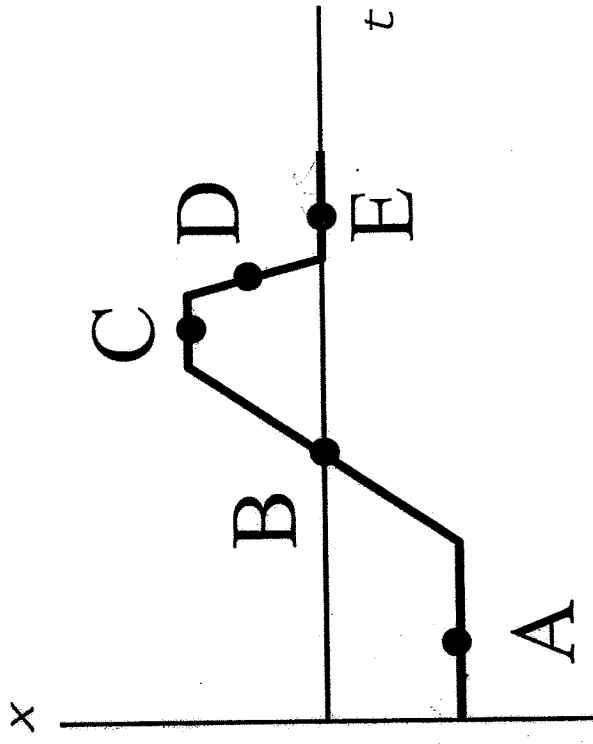
- A) A
- B) B
- C) C
- D) D
- E) E



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## Interactive Question

Consider the plot of  $x$  vs  $t$  at the right, at which point(s) is the object moving the fastest?



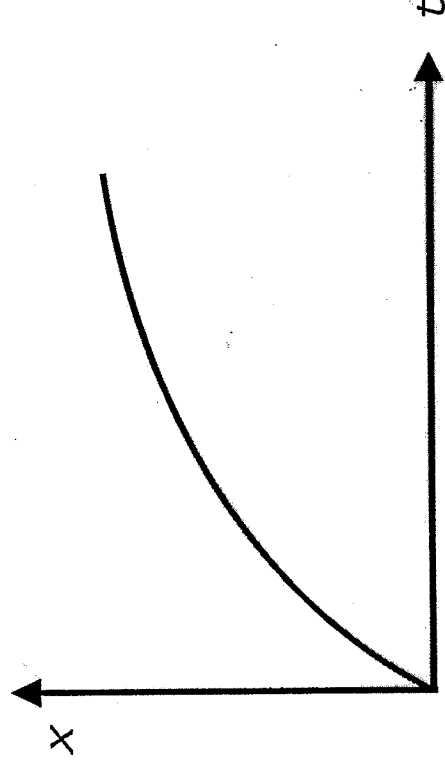
- A) A
- B) B
- C) C
- D) D
- E) E

D

## Interactive Question

**B**

The graph for position vs. time is given for a car. What can you say about the velocity of the car over time?



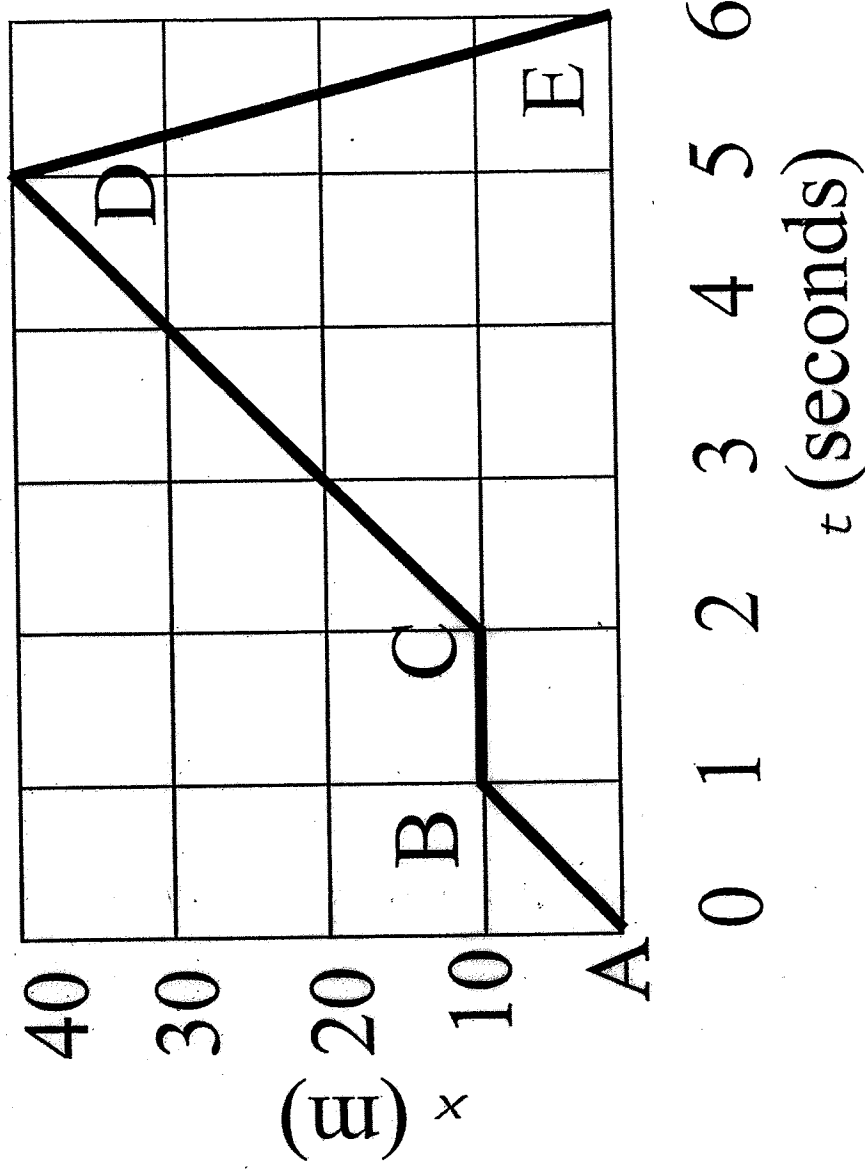
- A) it speeds up all the time
- B) it slows down all the time
- C) it moves at constant velocity
- D) sometimes it speeds up and sometimes it slows
- E) it turns around

## Interactive Question

(B)

An object is moving along a straight line.

The graph at the right shows its position from the starting point as a function of time.



What was the average velocity of the object during the first 4 seconds?

A) +6.0 m/s

C) +8.0 m/s

E) +13.3 m/s

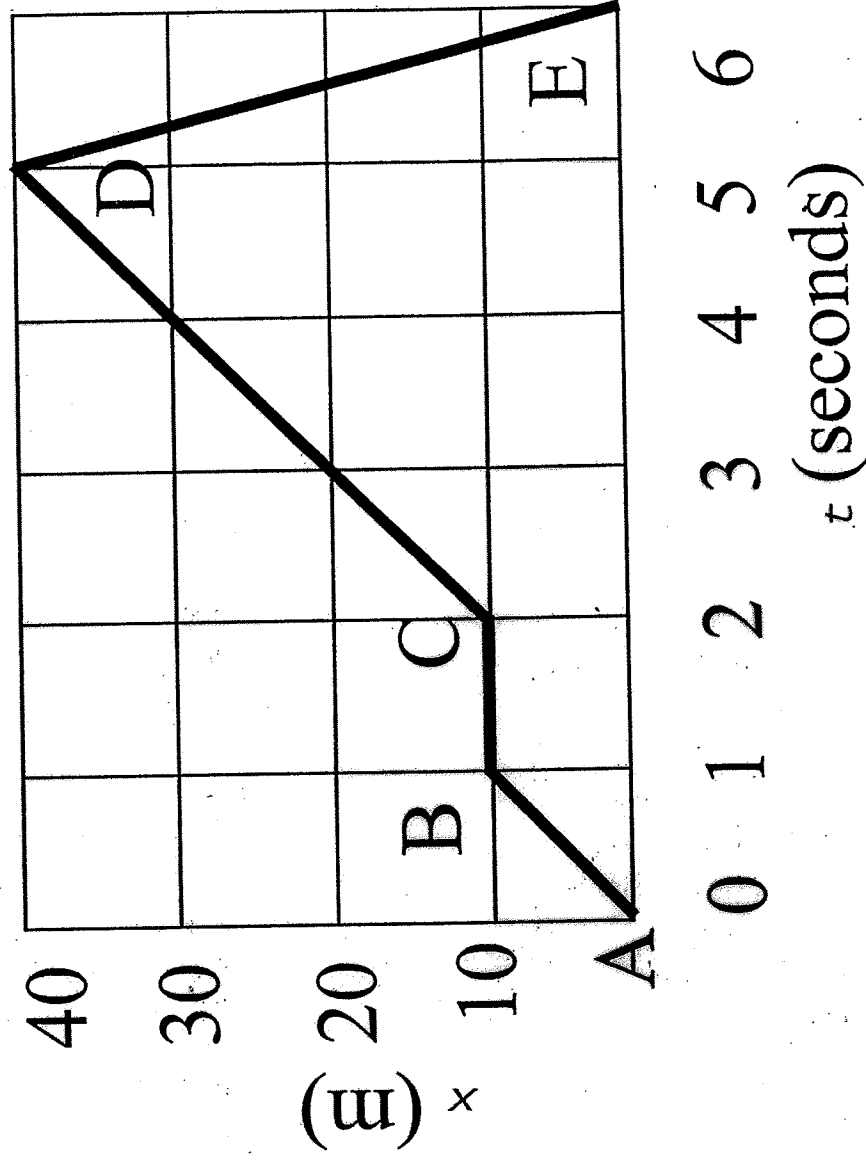
B) +7.5 m/s

D) +10.0 m/s

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## Interactive Question

An object is moving along a straight line. The graph at the right shows its position from the starting point as a function of time.



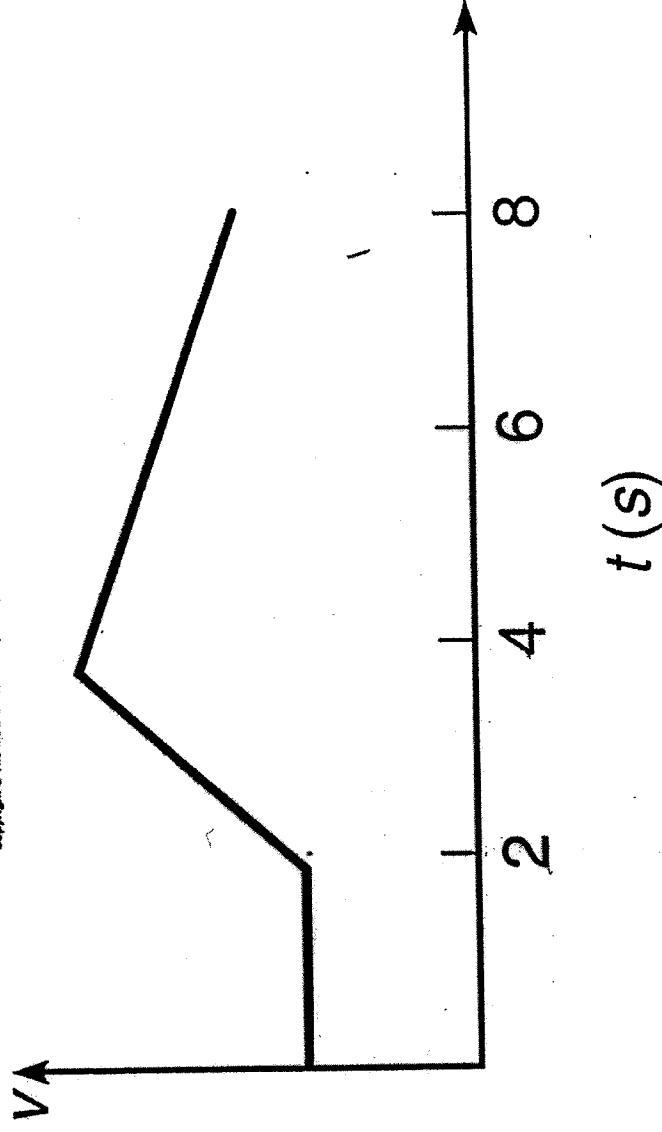
What was the instantaneous velocity of the object at  $t = 4$  seconds?

- A) +6.0 m/s
- B) +8.0 m/s
- C) +10.0 m/s
- D) +13.3 m/s
- E) +40 m/s

## Interactive Question

A

Consider this plot of velocity vs. time. Is the velocity constant during any time interval in this plot?

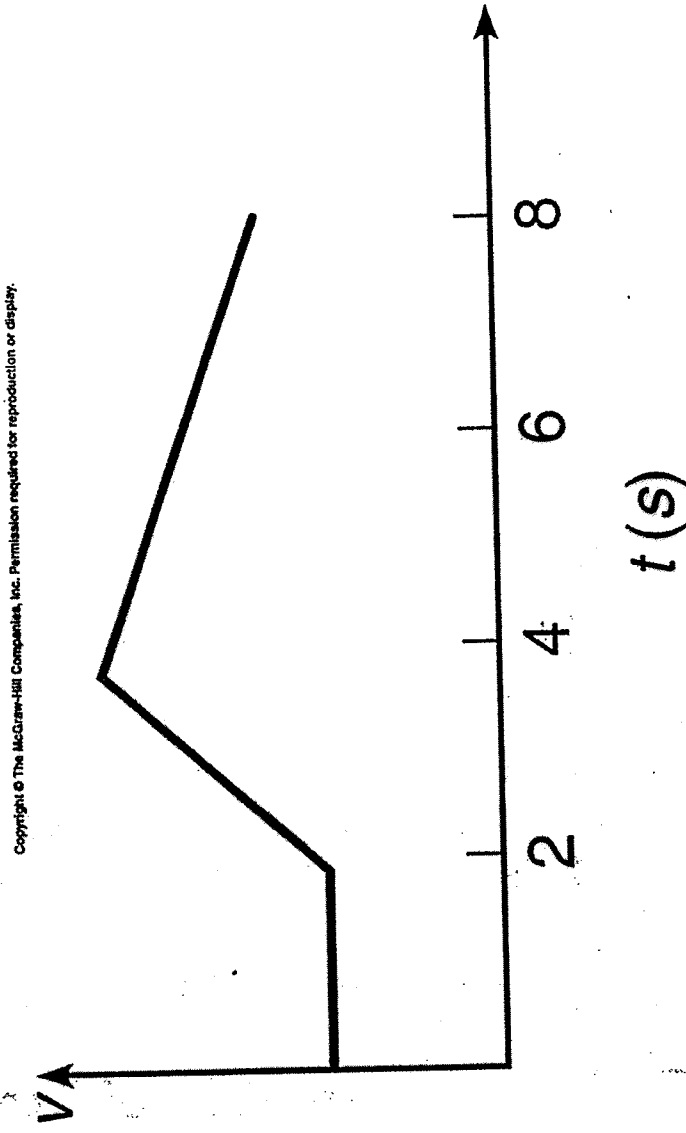


- A) Yes, between 0 s and 2 s.
- B) Yes, between 2 s and 4 s.
- C) Yes, between 4 s and 8 s.
- D) Yes, between 0 s and 8 s.
- E) No, never.

## Interactive Question

(B)

Consider this plot of velocity vs. time. During which time interval is the acceleration the greatest?

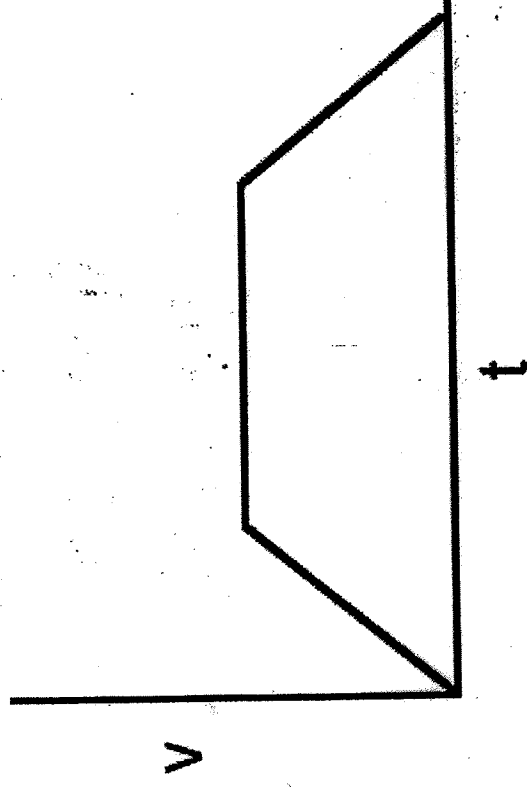


- A) Between 0 s and 2 s.
- B) Between 2 s and 4 s.
- C) Between 4 s and 8 s.
- D) The acceleration does not change.

(A)

## Interactive Question

Which scenario is portrayed by the graph?



- A) A car starts from rest and accelerates. It then travels at a constant velocity before slowing to a stop.
- B) A car starts from rest and moves forward. It stops for a while before returning to its starting position.
- C) A car travels at a constant velocity, then accelerates for a while, then returns to its initial constant velocity.

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## Interactive Question

The velocity of a car increases with time as shown. What is the average acceleration between 4 s and 8 s?

- A)  $4 \text{ m/s}^2$
- B)  $3 \text{ m/s}^2$
- C)  $2 \text{ m/s}^2$
- D)  $1.5 \text{ m/s}^2$
- E)  $1 \text{ m/s}^2$

