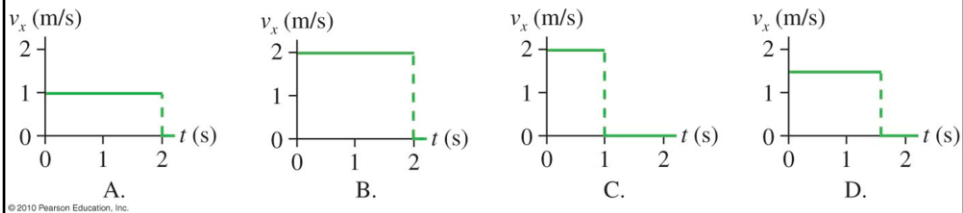


1/17/14

Four objects move with the velocity versus time graphs as shown below. Which has the largest displacement between  $t=0$  s and  $t = 2$  s?



B. The area under the curve in B. is the largest. You can use the area to find the displacement because the area is height  $\times$  width. So velocity  $\times$  time since the height is velocity and the width is time. This is simply the equation for distance. If you go 100 miles/hour for 2 hours, you travel 200 miles.

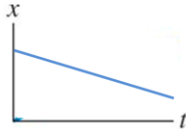
What is the slope of this graph?



- A. Positive
- B. Negative
- C. Neutral
- D. Not enough information

A. Slope is rise over run. This graph rises a positive amount during a given time interval.

What is the slope of this graph?



- A. Positive
- B. Negative
- C. Neutral
- D. Not enough information

B. Slope is rise over run. This graph rises a negative amount during a given time interval.

What is the slope of this graph?

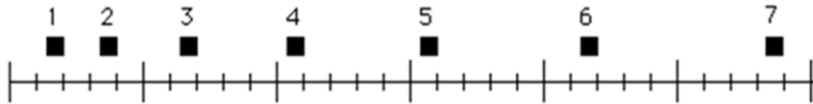


- A. Positive
- B. Negative
- C. Neutral
- D. Not enough information

C

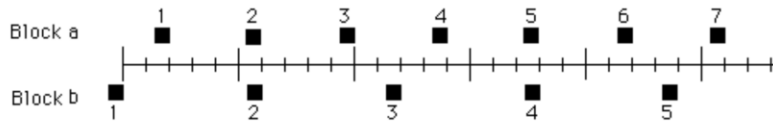
The position of one block at successive 0.20-second time intervals is represented by the numbered squares in the figure below. The block is moving toward the right.

- (A) The block's speed is constant.
- (B) The block's speed is increasing.
- (C) The block's speed is decreasing.
- (D) The block's speed is increasing and then constant.
- (E) Not enough information is given to answer the question.



B The distance that the block moves during each time interval is getting larger so the speed must be increasing.

The positions of two blocks at successive 0.20-second time intervals are represented by the numbered squares in the figure below. The blocks are moving toward the right.

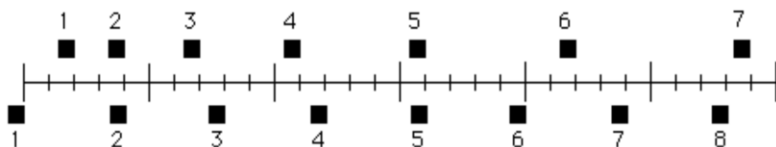


The accelerations of the blocks are related as follows:

- (A) The acceleration of "a" is greater than the acceleration of "b".
- (B) The acceleration of "a" equals the acceleration of "b". Both accelerations are greater than zero.
- (C) The acceleration of "b" is greater than the acceleration of "a".
- (D) The acceleration of "a" equals the acceleration of "b". Both accelerations are zero.
- (E) Not enough information is given to answer the question.

D Both blocks are moving an equal distance every time frame. This means they are both moving at a constant speed. Therefore neither block has an acceleration since acceleration means the speed is changing.

The positions of two blocks at successive 0.20-second time intervals are represented by the numbered squares in the figure below. The blocks are moving toward the right.



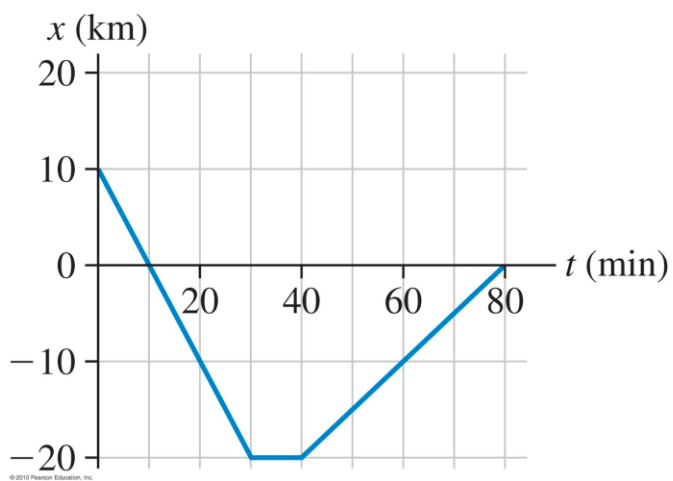
Do the blocks ever have the same speed?

- (A) No.
- (B) Yes, at instant 2.
- (C) Yes, at instant 5.
- (D) Yes, at instants 2 and 5.
- (E) Yes, at some time during the interval 3 to 4.

E The space between the frames represents the velocity. Between 3 and 4 is the only point where the spacing is equal between the frames.



What does the Velocity vs. time graph of this position vs. time graph look like?



What does the Velocity vs. time graph of this position vs. time graph look like?

