

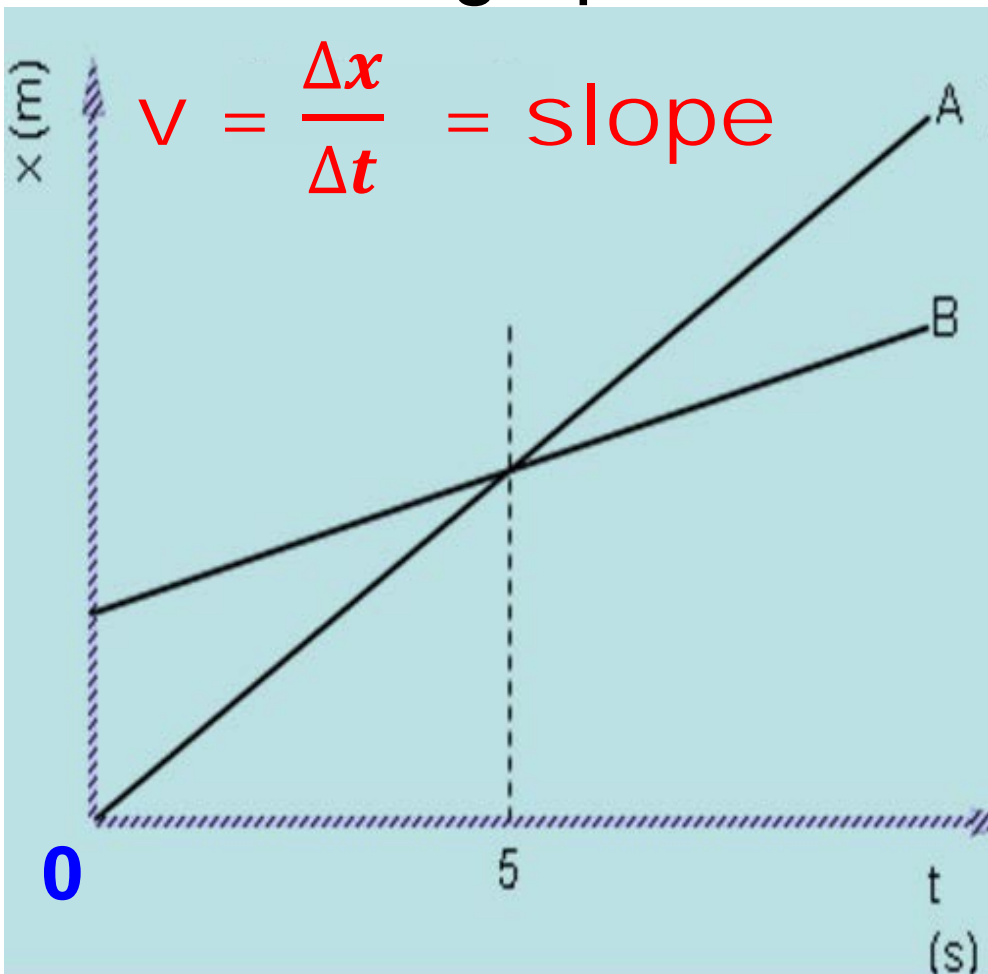
Physics Bell Work, Feb 9 - 12, 2015

Physics: Constant Velocity, distance,
displacement, speed, path length

Physics Bell Work, Monday, Feb 9



Sketch the graph.



2. Which object started further from the origin, A or B? How do you know

B, its further from the origin along the position axis.

3. Which object has the greater final position? How do you know?

A, its further from the origin along the position axis.

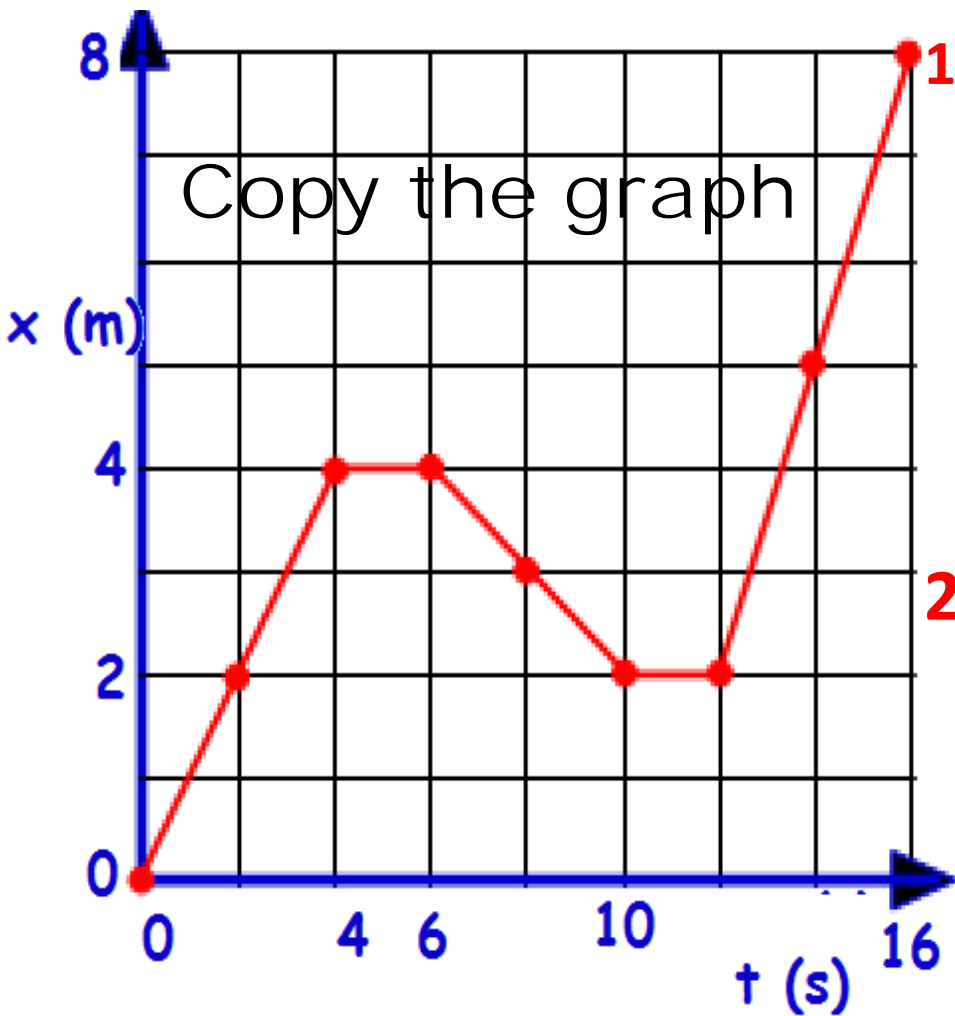
4. Which object is going faster? How do you know?

A, it covered more ground in the same amount of time. Also, the slope of A is greater than B.

1. What does the slope of a line on a position – time graph mean?

The slope of a position-time graph gives you the average velocity over that time interval.

IB Physics Bell Work, Tues, Feb 10, 2015



1. Av Velocity = $\frac{\Delta x}{\Delta t} = \frac{x_f - x_i}{t_f - t_i}$

$$\bar{v} = \frac{\Delta x}{\Delta t} = \frac{8.0\text{m} - 0.0\text{m}}{16.0\text{s} - 0\text{s}} = 0.50 \frac{\text{m}}{\text{s}}$$

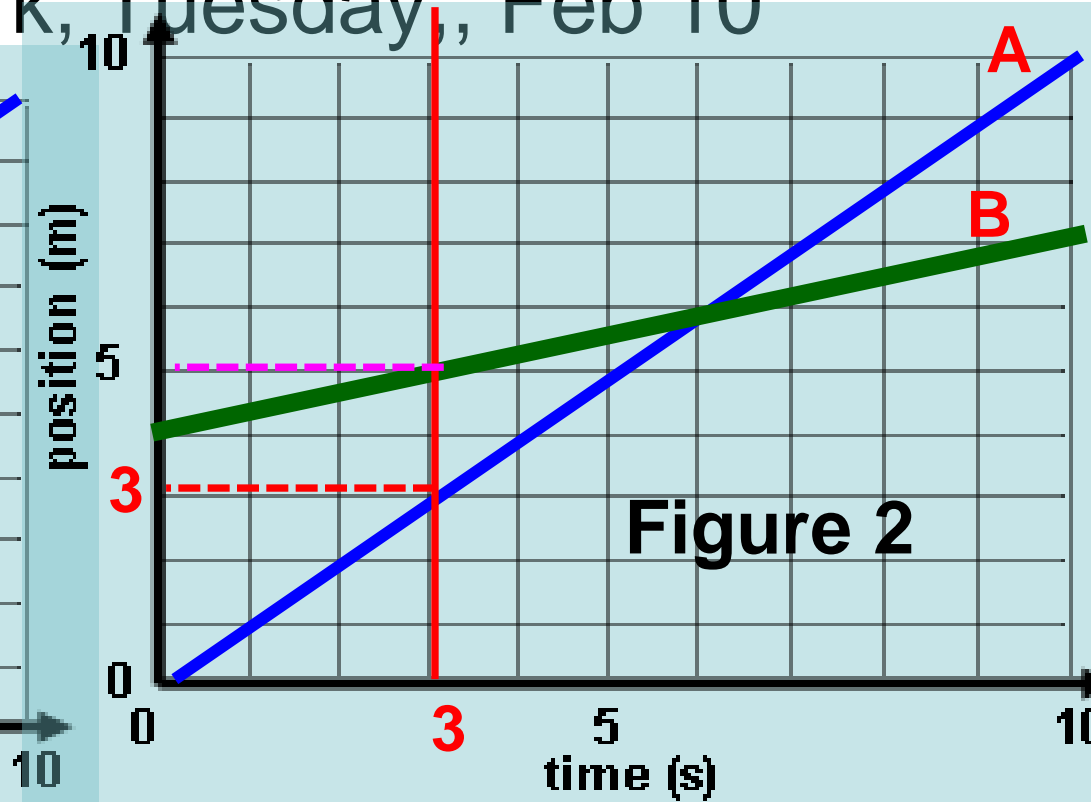
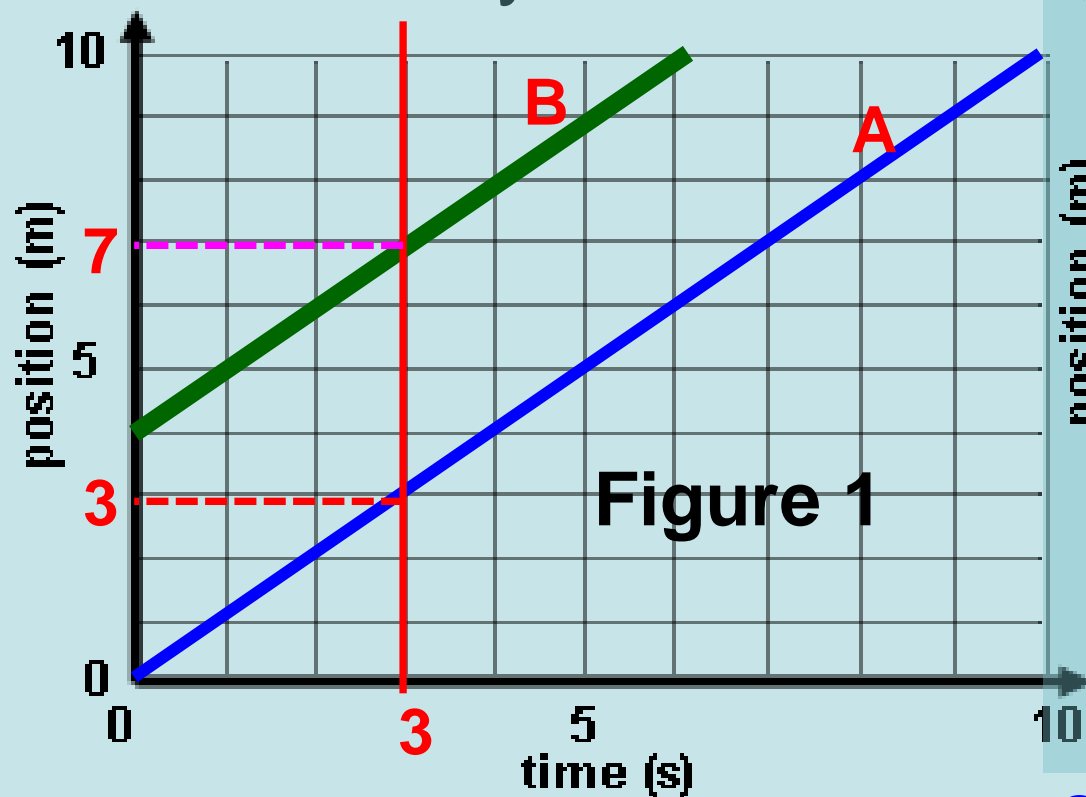
2. Av speed = $\frac{\text{path length}}{\Delta t} =$

$$\frac{4.0\text{m} + 0 + 2.0\text{m} + 0 + 6.0\text{m}}{16.0\text{s} - 0\text{s}} = \frac{12.0\text{m}}{16.0\text{s}} = 0.750 \frac{\text{m}}{\text{s}}$$

1. Determine the skater's average velocity from $t = 0\text{s}$ to $t = 16\text{s}$.
2. Determine the skater's average speed from $t = 0\text{s}$ to $t = 16\text{s}$.

w/s 3, 3 (d) (e)

Physics Bell Work, Tuesday, Feb 10

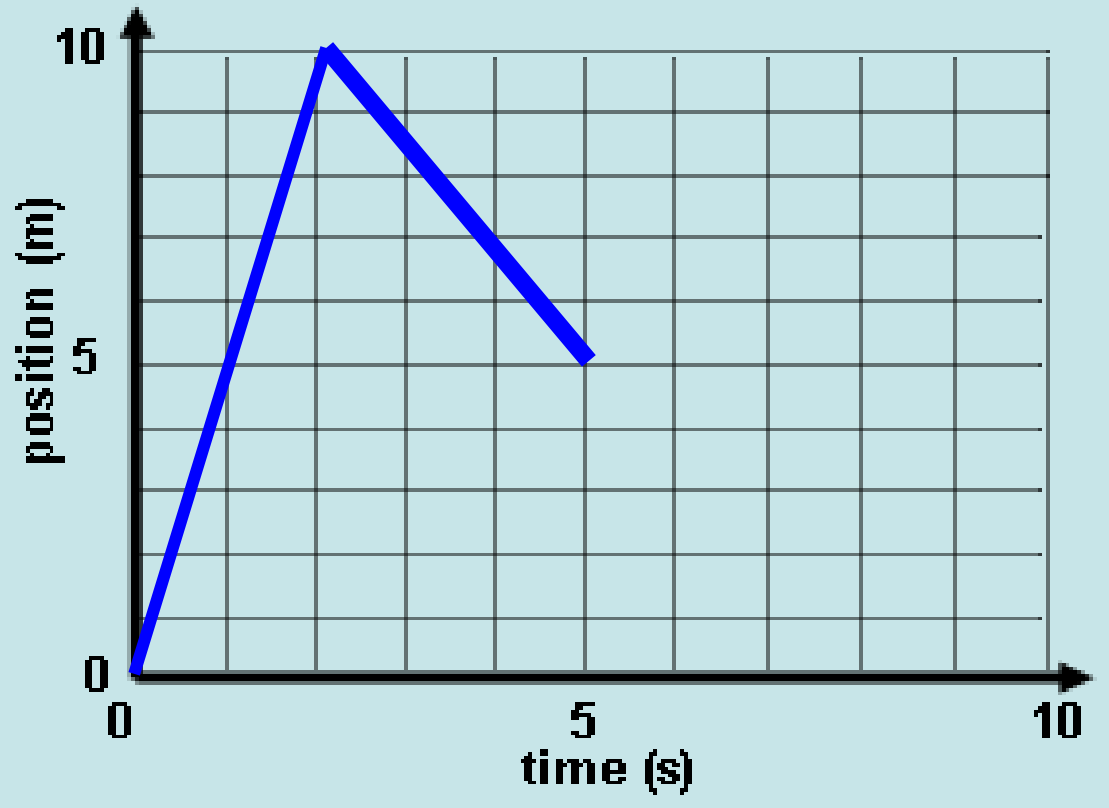


1. What is the speed of A? **1 m/s**
2. What is the speed of B? **1 m/s**
3. Where is A at 3 s? **3 m**
4. Where is B at 3 s? **7 m**
5. Why is B ahead of A at 3s?
Because B has a head start over A (B started at 4m, A at 0m).

6. What is the speed of A? **1 m/s**
7. What is the speed of B? **0.3 m/s**
8. Where is A at 3 s? **3 m**
9. Where is B at 3 s? **5 m**
10. Why is B ahead of A at 3s?
Because B has a head start over A (B started at 4m, A at 0m).

Physics Bell Work, Tuesday,, Feb 10

1. Sketch the graph.



11. *Displacement* $\Delta x = x_f - x_i =$

$$5\text{ m} - 0\text{ m} = 5\text{ m}$$

12. $\frac{\Delta x}{\Delta t} = \frac{x_f - x_i}{t_f - t_i} = \frac{5\text{ m} - 0\text{ m}}{5\text{ s} - 0\text{ s}} = 1 \frac{\text{m}}{\text{s}}$

13. Path length =

$$10\text{ m} + 5\text{ m} = 15\text{ m}$$

14. Speed =

$$\frac{\text{path}}{\Delta t} = \frac{10\text{ m} + 5\text{ m}}{5\text{ s} - 0\text{ s}} = \frac{15\text{ m}}{5\text{ s}} = 3 \frac{\text{m}}{\text{s}}$$

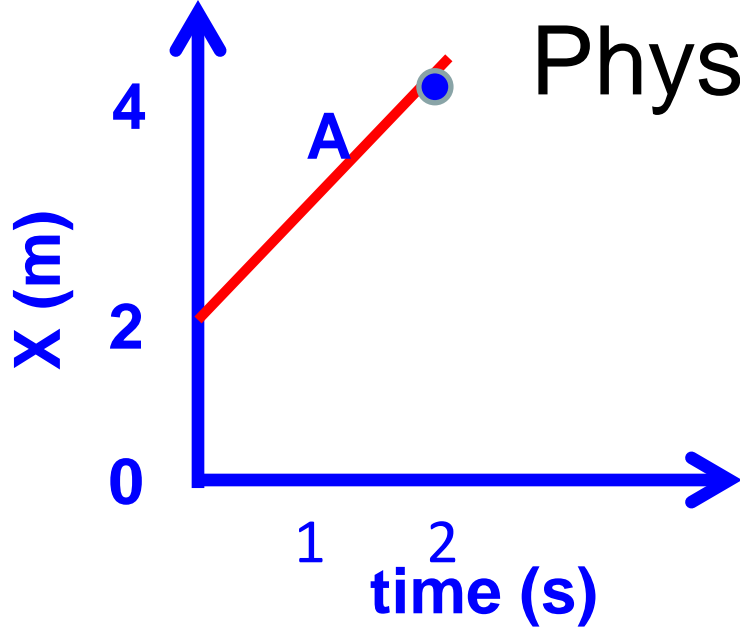
11. Calculate the displacement.

12. Calculate the velocity.

13. Calculate the path length

14. Calculate the speed

Physics Bell Work, Wed, Feb 11



1. What is the slope of A? **1 m/s**
2. Write an equation to find the x position
 $x = (1 \text{ m/s}) \cdot t + 2\text{m}$
3. What quantity is 1 m/s?

average velocity, $\bar{v} = \frac{\Delta x\text{-position}}{\Delta \text{time}}$

4. What is the importance of **$b = 2\text{m}$**
It is the starting position or initial position, called **X_0**

5. Write a general equation to find the x position using only symbols.

$$X = v \cdot t + x_0$$

x = x-position, v = velocity, t = time, x_0 initial position

6. What is another way to find x- position?

$$\Delta x = x_f - x_i$$

Physics Bell Work, Wed, Feb 11

7. The area between the line and the horizontal axis have physical meaning.

a. determine the units and the area for a square of area on the graph.

$$1 \cancel{s} * \frac{1m}{\cancel{s}} = 1 m$$

b. What does the area "under the velocity-time graph" tell you about the motion of an object?

The area under a velocity vs. time graph tells you Δx , the change in position during that time interval. So: $\Delta x = v \cdot t$

Or you can count the squares on a v-t graph to get Δx .

