NOTES -   **THE MOVING MAN (Competency 1)**   Name:_____

(Physics 20)
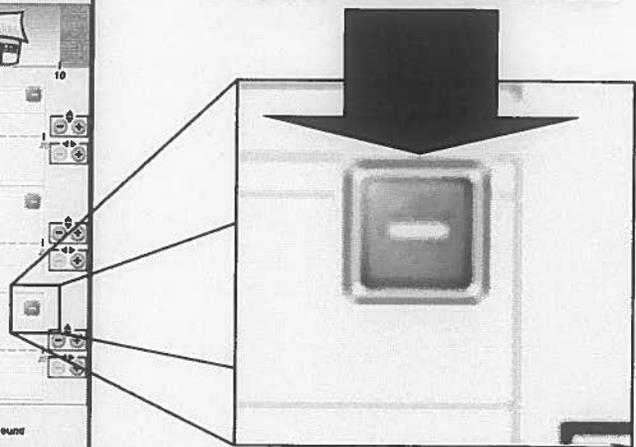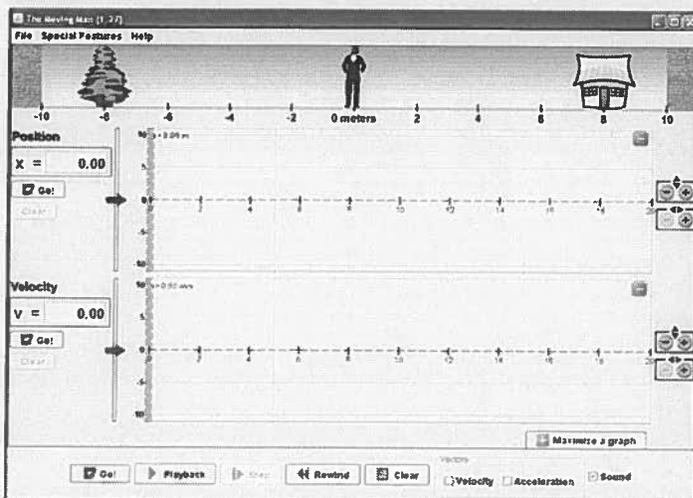
Instructions:

1. Open up the following website:
    http://phet.colorado.edu/simulations/sims.php?sim=The_Moving_Man

2. Click the green button that says "Run Now!" and a window will pop open and
    ask if you want to open it with Java. Press the "OK" button.

3. A window will open up called "The Moving Man" that looks like the image
    below. We are only interested in the Position and Velocity graphs, so we will
    close down the Acceleration graph.
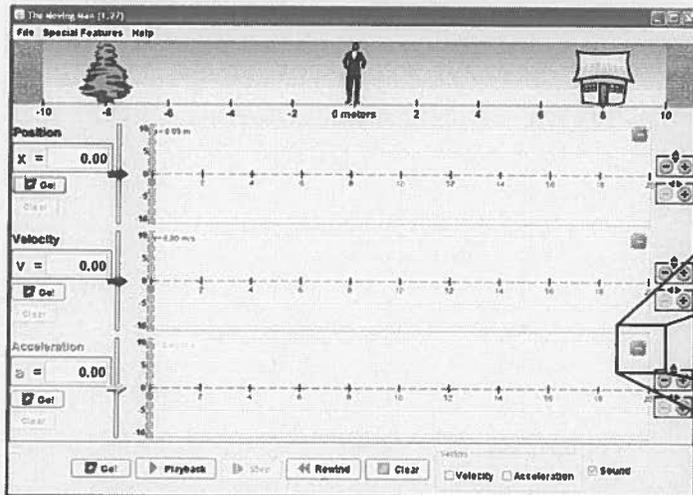
PRESS TO CLOSE

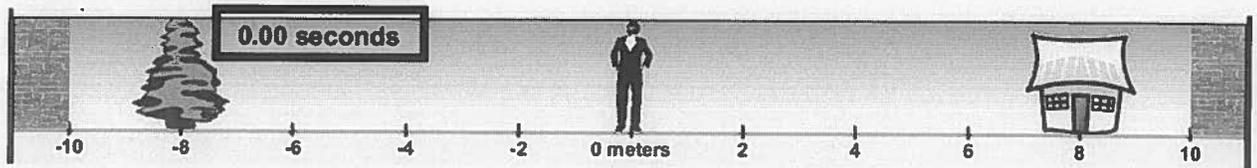4. The program should now look like the image below.

Instructions (Continued):
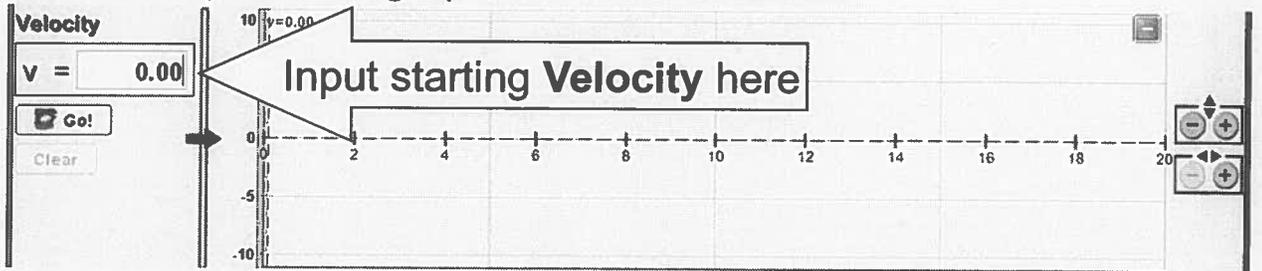
5. There are several important parts to the program:

A) The moving man, who we'll refer to as Abraham. He cannot move more than 10 meters from his starting position, and will stop if he runs into a wall. This window also shows the time, highlighted in the red box.
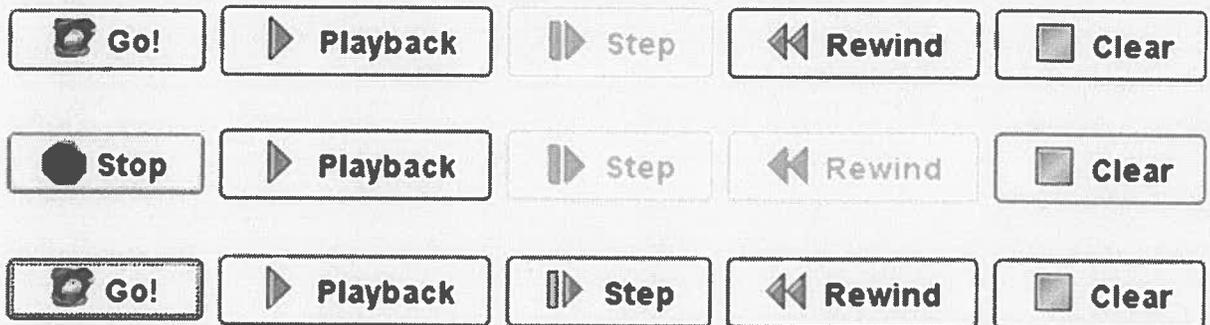

B) The Position vs. Time graph, which uses a blue line.
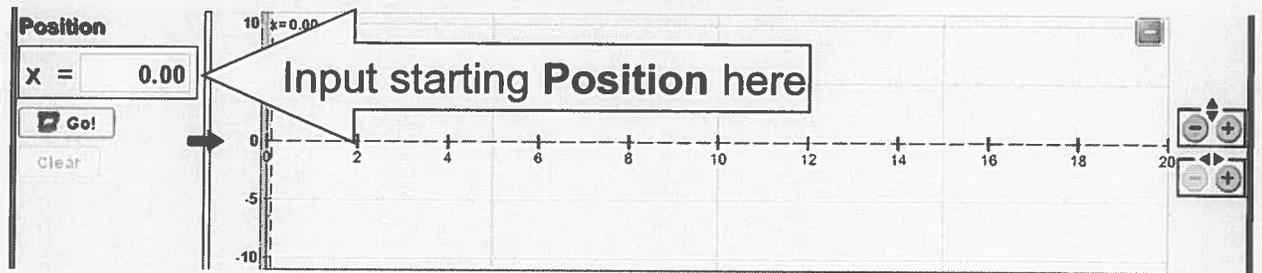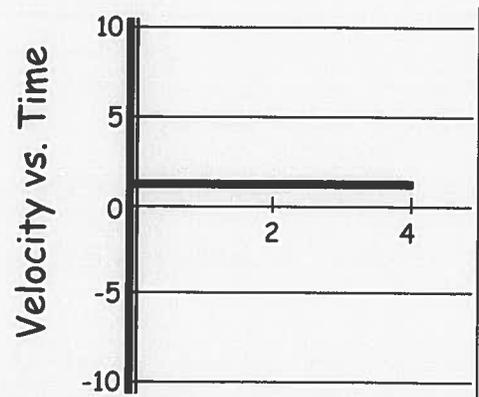

C) The Velocity vs. Time graph, which has a red line.

D) The controls at the bottom of the page, which can look different depending on whether the program is idle (first picture), currently running (second picture), or stopped (third picture).

EXAMPLE #1: Abraham is initially at a position of -10 meters [East]. He moves with a velocity of 1 m/s [East] for 4 seconds. Draw the Position vs. Time and Velocity vs. Time graphs.
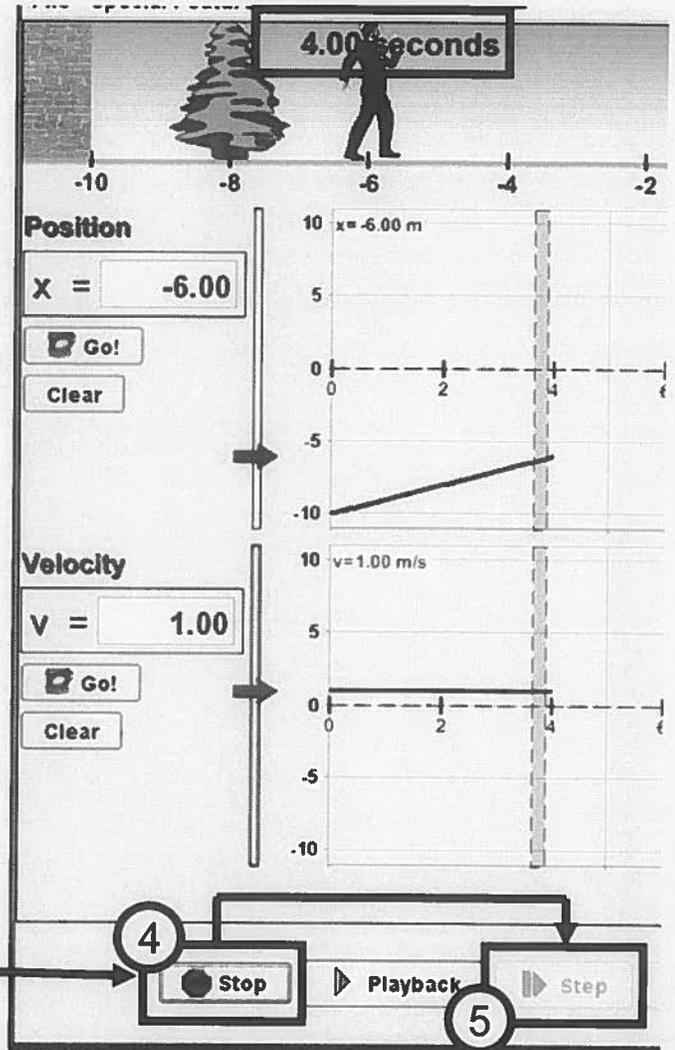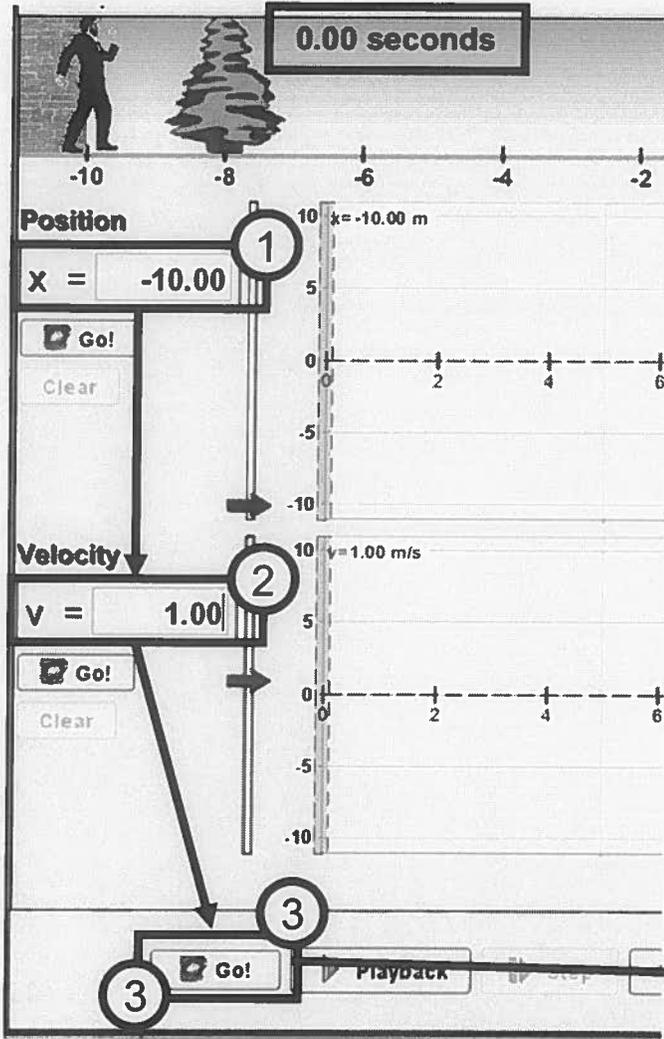
After inputting the numbers into the program and seeing the results, the student would draw it on the blank graphs provided.
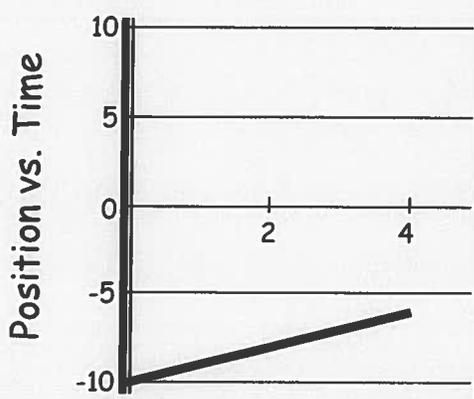
QUESTION #1:

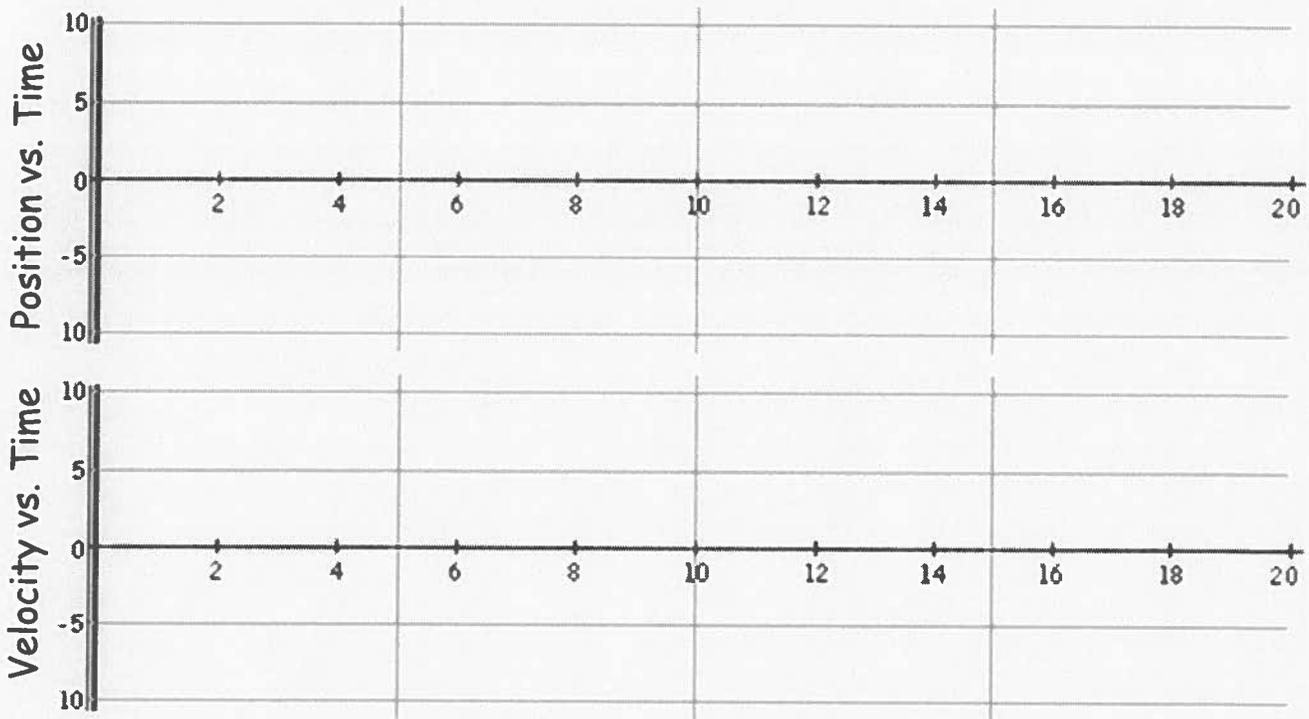Abraham has an initial position of 0m [East] and moves at a velocity of 2m/s [East]. Draw the Position vs. Time and Velocity vs. Time graphs.
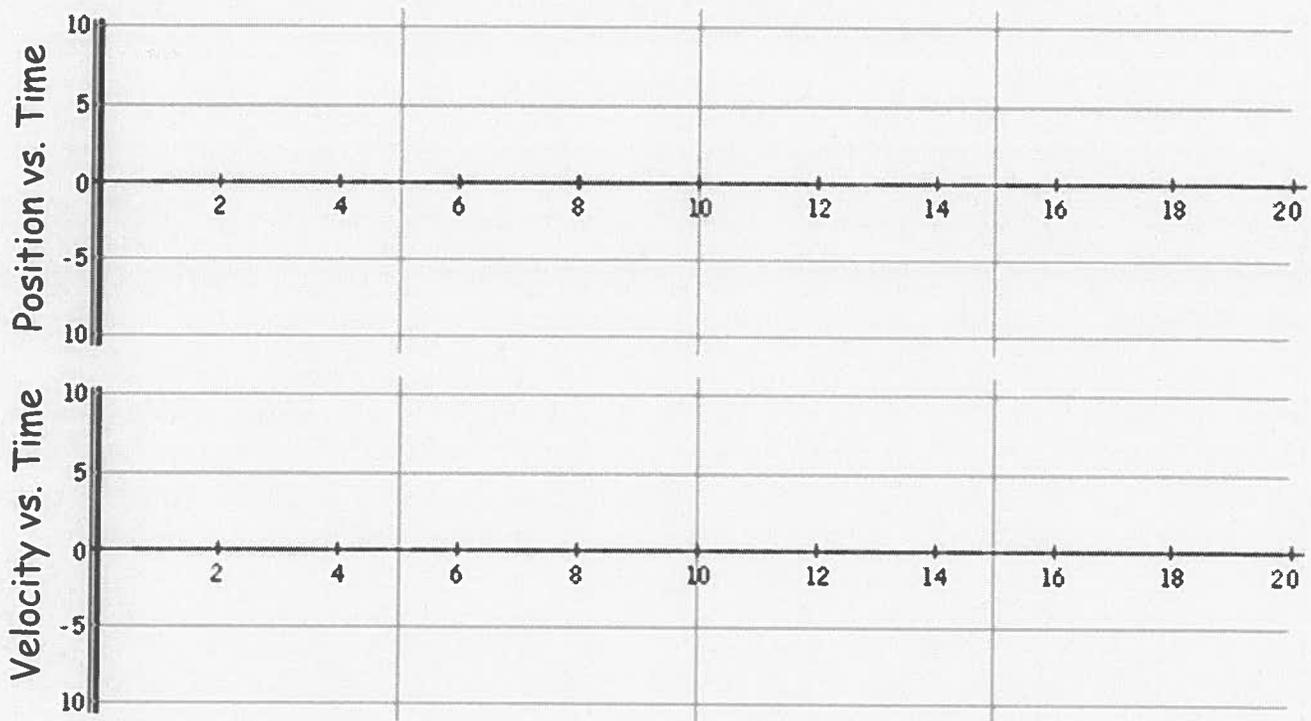

When Abraham had a velocity of 2m/s [East], which direction was he moving?

Look at the Velocity vs. Time graph. Was Abraham moving at a constant velocity for the first 5 sec?

Look at the Velocity vs. Time graph. Did Abraham have at a constant velocity after he hit the wall?

QUESTION #2:

Abraham has an initial position of 0m [East] and moves at a velocity of 5m/s [East]. Draw the Position vs. Time and Velocity vs. Time graphs.
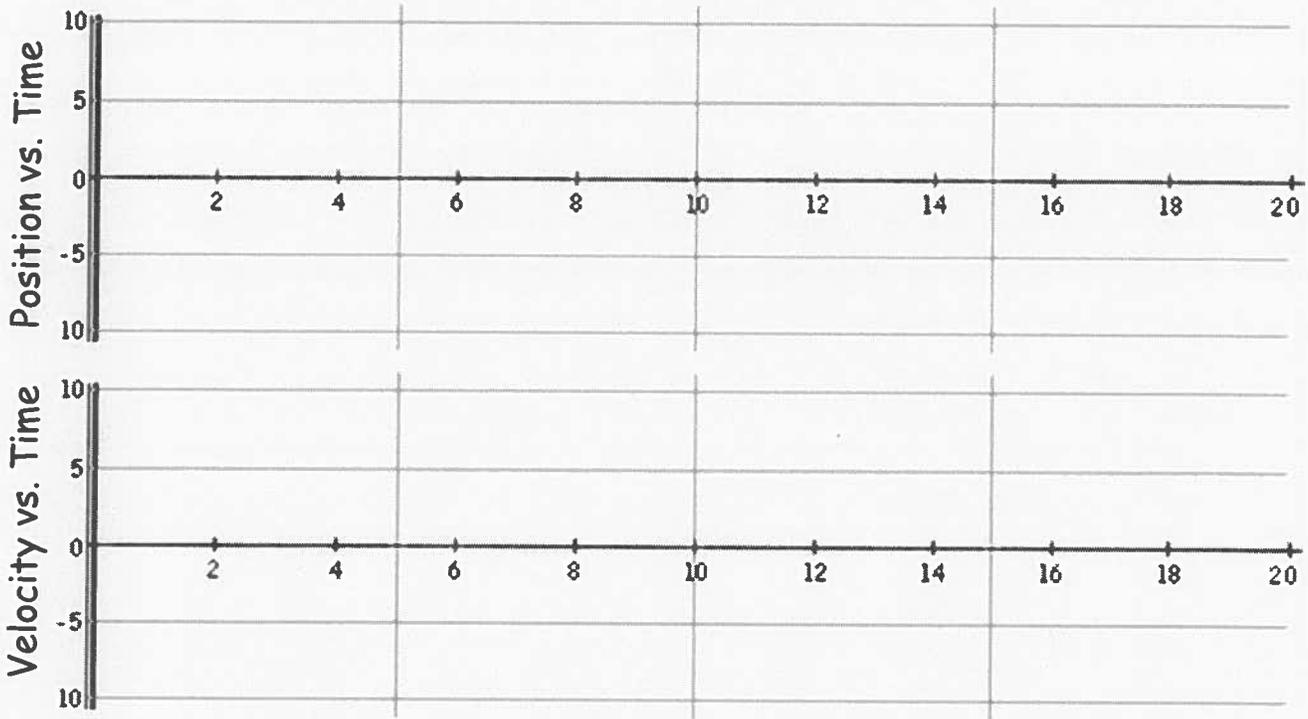

When Abraham had a velocity of 5m/s [East], which direction was he moving?

In both question #1 and question #2, Abraham is moving in the same direction. Why don't the Position vs. Time graphs look the same?

QUESTION #3:

Abraham has an initial position of 0m [East] and moves at a velocity of -5m/s [East]. Draw the Position vs. Time and Velocity vs. Time graphs.


When Abraham had a velocity of -5m/s [East], which direction was he moving?

How does the Position vs. Time graph look different from the graph you drew in question #2?

How does the Velocity vs. Time graph look different from the graph you drew in question #2?

QUESTION #4:

Mr. Bayer says that Abraham is moving East. Is he telling the truth? Explain.

Position vs. Time

10 x= -9.50 m

5

0

-5

-10

0   2   4   6   8   10   12   14   16   18   2
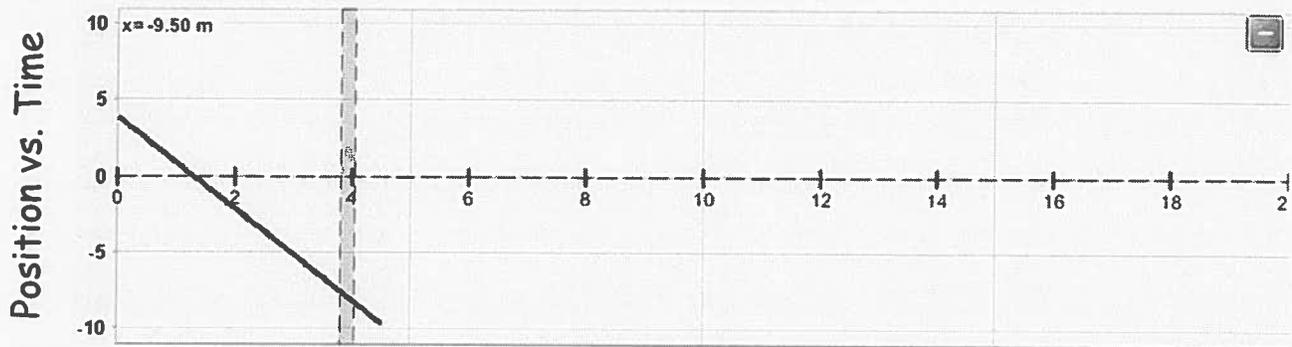
QUESTION #5:

Mr. Bayer says that Abraham is moving East. Is he telling the truth? Explain.

10 v=7.00 m/s

5

0

-5

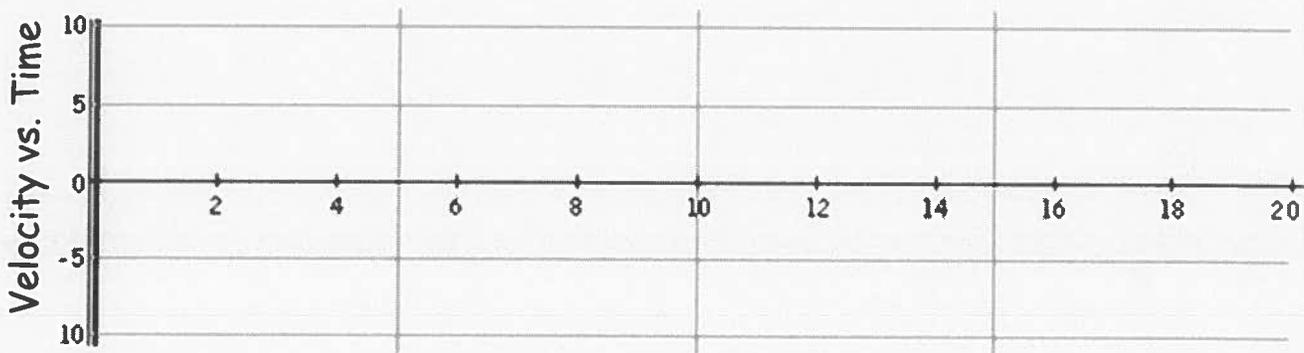-10

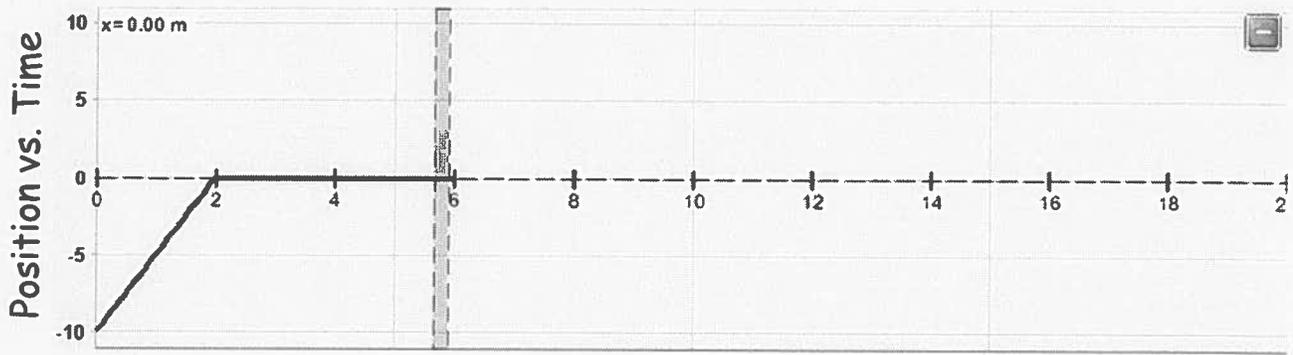0   2   4   6   8   10   12   14   16   18   2

QUESTION #6:

Mr. Bayer accidentally lost Abraham's Velocity vs. Time graph. Help to reconstruct it using the Position vs. Time graph provided.
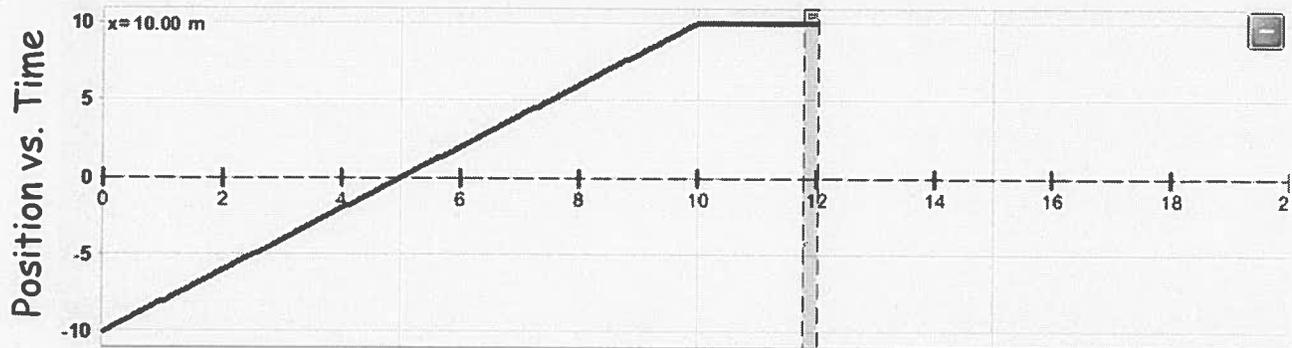
HINT #1: Remember that $\vec{v} = \dfrac{\Delta \vec{d}}{\Delta t}$

HINT #2: Confirm your answer by recreating the graph! =)

QUESTION #7:

The graph below shows Abraham's position over a 12 second period.

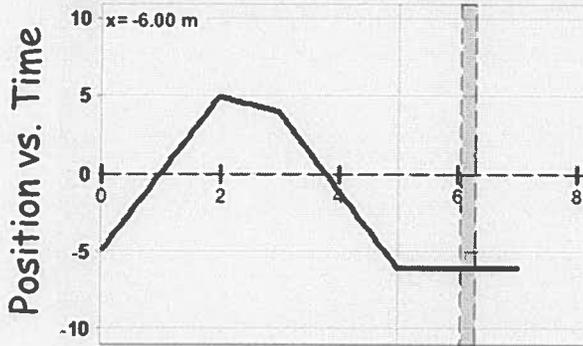Between 0 seconds and 5 seconds, in which direction is Abraham travelling?

Between 5 seconds and 10 seconds, in which direction is Abraham travelling?

Does Abraham change velocity between 0 seconds and 10 seconds?

Between 2.312 seconds and 5.761 seconds, what is Abraham's velocity?

QUESTION #8:

The graph below shows Abraham's position over a 7 second period.

Which of the following graphs shows Abraham's velocity?