

Moving Man

Position vs. Time Graphs

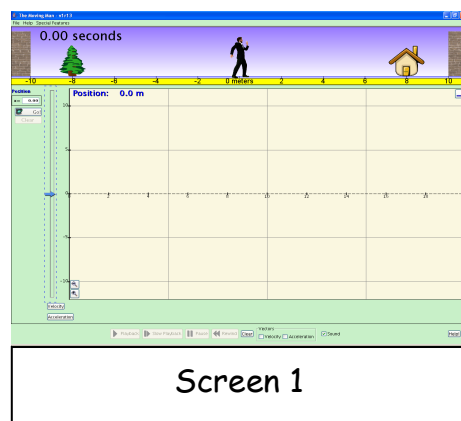
Background – Graphs are not just an evil thing your teacher makes you create, they are a means of communication. In this activity you will learn to speak and read “graph”.

Learning Goals – The students will:

- Develop a general knowledge of position-time graphs.
 - What a graph of a person standing still would look like
 - What a graph of a person moving away from an observer would look like.
 - What a graph of a person moving towards an observer would look like.
 - How differences in speed appear on the graph

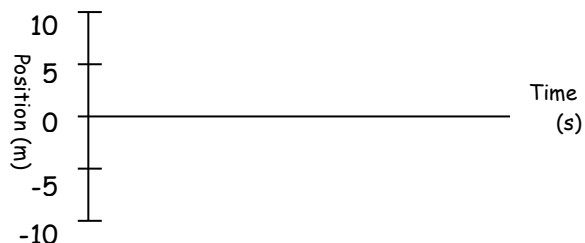
Procedure – do the following activity using this web site <http://www.colorado.edu/physics/phet/simulations-base.html>
Then click on “The Moving Man”

1. **Getting started.** After “Moving Man” is open leave the position graph open but close all of the other graphs, velocity and acceleration. Your screen should look like screen 1.
2. **Making observations.** By either clicking on the man or the slider cause the man to move back and forth and observe what shows up on the graph. Using the axes provided below make a sketch of the graph that is produced by each action described next to each axis.



Screen 1

A man moving from 0m to 10m at a slow steady pace.



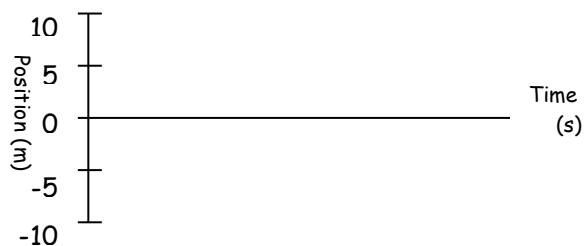
A man moving from 0m to 10m at a fast pace.



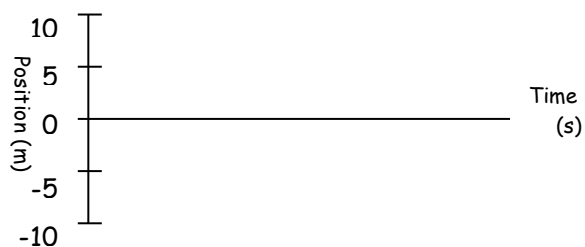
A man standing still at 4m.



A man moving from 0m to 10m at a slow steady pace, then moving back to 0m at a fast pace.



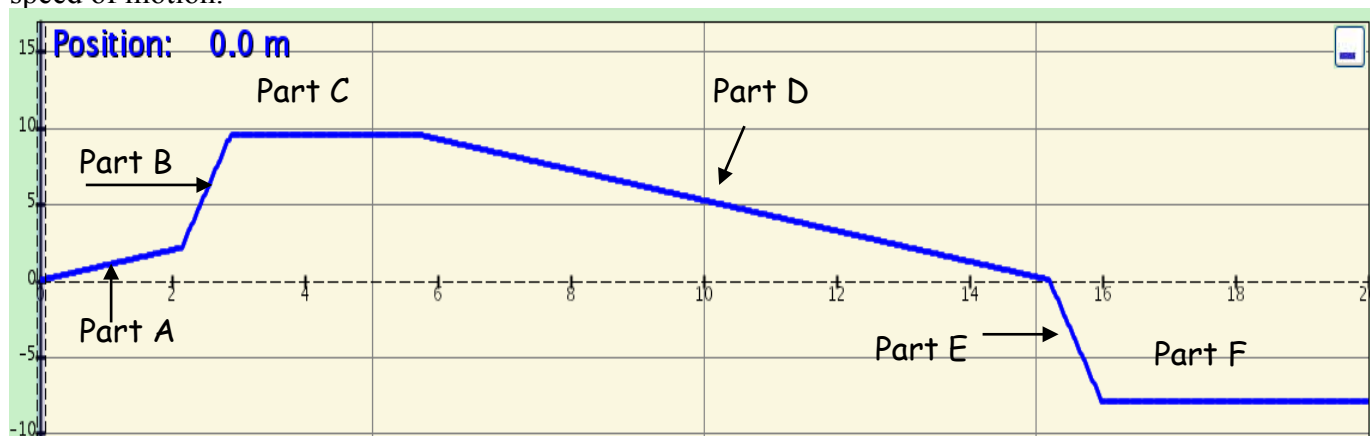
A man moving from 0m to 5m at a slow steady pace, then moving back to 0m at a slow steady pace.



A man moving from 0m to -10m at a slow steady pace.



Apply what you learned. Look at the graph below and for the different parts of the graph that are marked write a statement about what is happening. Be sure to include the direction of motion and the speed of motion.



Part	Description of direction and speed
A	
B	
C	
D	
E	
F	

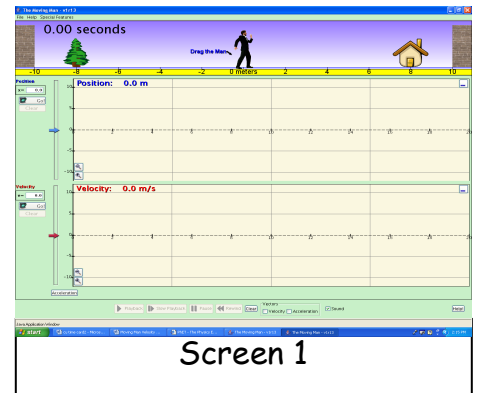
Velocity vs. Time Graphs

Background – Remember graphs are not just an evil thing your teacher makes you create, they are a means of communication. Graphs are a way of communicating by using pictures and since a picture is worth a thousand words knowing how to make and interpret graphs will save you a lot of writing.



Learning Goals – The students will:

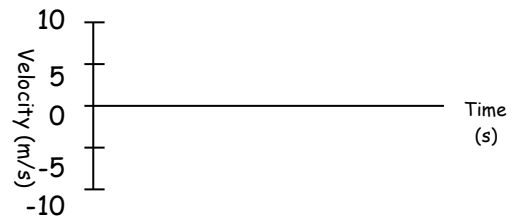
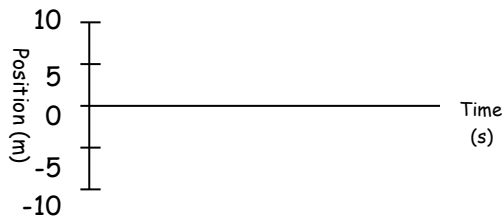
- Develop a general knowledge of “Velocity vs. Time” graphs and “Distance vs. Time” graphs
 - What graphs of a person standing still would look like
 - What graphs of a person moving away from an observer at a constant speed would look like.
 - What graphs of a person moving towards an observer at a constant speed would look like.
 - How differences in speed appear on the graphs



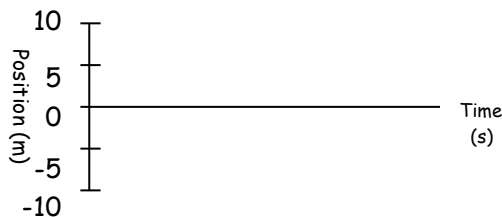
Procedure – Do the following activity using this web site <http://www.colorado.edu/physics/phet/simulations-base.html> Then click on “The Moving Man”

3. **Getting started.** After “The Moving Man” is open leave the position graph and the velocity graph open but close the acceleration graph. Your screen should look like screen 1.
4. **Making observations.** By either clicking on the man or the slider cause the man to move back and forth and observe what shows up on the graphs. Using the axis provided below make sketches of Position vs. Time and Velocity vs. Time graphs for the actions described next to each axis.

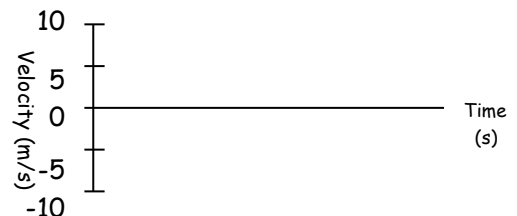
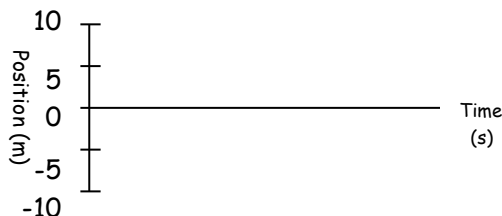
A man moving from 0 to 10 at a slow steady pace.



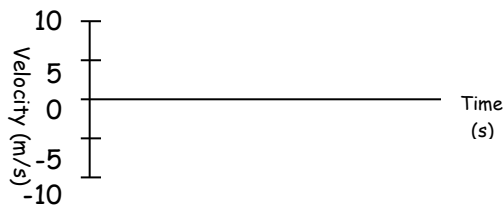
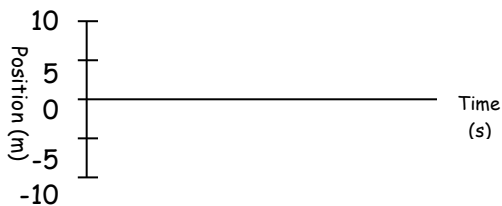
A man moving from 0 to 10 at a fast pace.



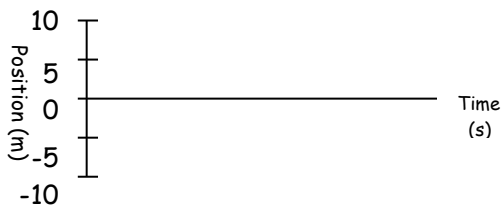
A man standing still at 4 m



A man moving from 0 to 10 at a fast pace the moving back to 0 at a slow pace.



A man moving from 0 to -10 at a fast pace the moving back to 0 at a slow pace.



A man moving from 10 to 0 at a fast pace.



Apply what you learned. Look at the Position vs. Time graph below and for the different parts of the graph that are marked by the dotted lines make the corresponding Velocity vs. Time graph directly below each part.

