Name: ____ Period: _____

PhET Simulation – "The Moving Man"

Describe **(with detail, using complete sentences)** the motion of the man when you play the simulation starting with the conditions below. Some helpful phrases:

to the right, to the left, comes to a stop, slows down, speeds up, starts, ends, at rest, constant speed

Position	Velocity	Acceleration	Description
0.0 m	1.0 m/s	- 0.1 m/s^2	
- 10.0 m	5.0 m/s	- 1.0 m/s^2	
8.0 m	0.0 m/s	-3.0 m/s^2	
- 4.0 m	- 2.0 m/s	1.5 m/s^2	
- 9.0 m	2.5 m/s	0.0 m/s^2	

Questions (answer using complete sentences):

1.) When the acceleration is zero, what can you say about the velocity of an object?

2.) Is it possible to have negative velocity but positive acceleration? If so, what would this mean?

Fill in the blank:

1.) If the man is moving from a position of 0 m to 6 m in 3 seconds he will move __________________ than he would have if he moved from a position of – 4 m to 0 m in 3 seconds.
Answer choices: slower, faster, the same speed as

2.) Looking at the position of the house and the tree, if the man ran starting from the house going to the tree in 8 seconds, the average velocity would be ___________________.

3.) Starting at a position of 0 m, if the man is moving at a constant velocity of 2 m/s, it will take __________ seconds for him to reach a position of 12 m.

Now, switch to the "charts" tab at the top of the window.

For the following starting conditions, draw the graphs that are obtained, and describe the motion **with detail.** Only draw the graph up to the point when the man crashes into the wall; don't include the crash.

Position = - 10.0 m, Velocity = 2.0 m/s, Acceleration = 0.0 m/s^2

position

velocity

acceleration

Description:

Position = 10.0 m, Velocity = - 4.0 m/s, Acceleration = 0.0 m/s^2

position

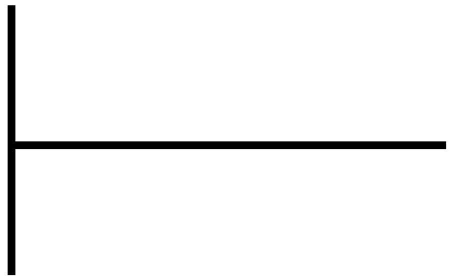
velocity

acceleration

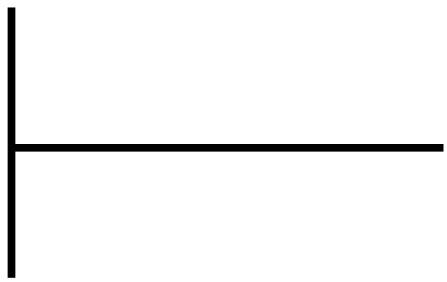
Description:

Position = 0.0 m, Velocity = 4.0 m/s, Acceleration = - 1.1 m/s^2

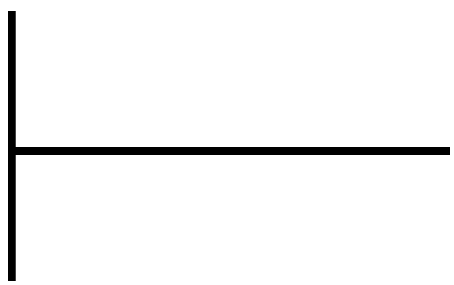
position



velocity



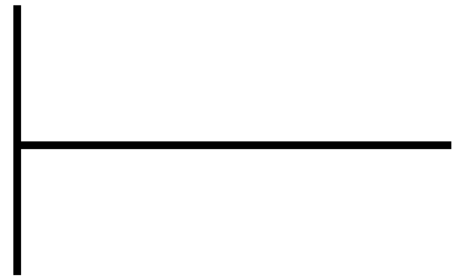
acceleration



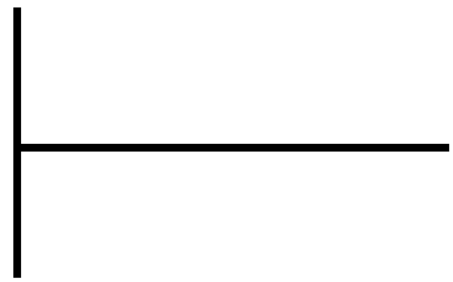
Description:

Position = 4.0 m, Velocity = - 8.0 m/s, Acceleration = 5.0 m/s^2

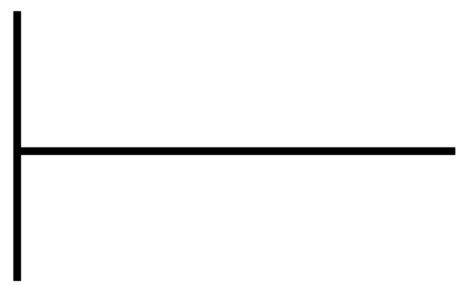
position



velocity



acceleration



Description:

<u>Questions:</u>

1.) If the *position* graph is a flat line, what does that tell you about the motion? **Why?**

2.) If the *velocity* graph is a flat line, what does that tell you about the motion? **Why?**

3.) If the *acceleration* graph is a flat line, what does that tell you about the motion? **Why?**

4.) If the *position* graph is a straight line sloping upward, what does that say about the motion? **Why?**

5.) If the *position* graph is a straight line sloping down, what does that say about the motion? **Why?**

6.) If the *velocity* graph is a straight line sloping upward, what does that say about the motion? **Why?**

7.) If the *velocity* graph is a straight line sloping down, what does that say about the motion? **Why?**

8.) If the *position* graph is a curved line, what does that tell us about the motion? **Why?**

9.) If the *velocity* graph is a curved line, what does that tell us about the motion? **Why?**

10.) Now, drag the man yourself using the mouse cursor. Describe the motion that you created, and draw both a **position graph** and a **velocity graph** below: