Part 1: Distance vs. Displacement
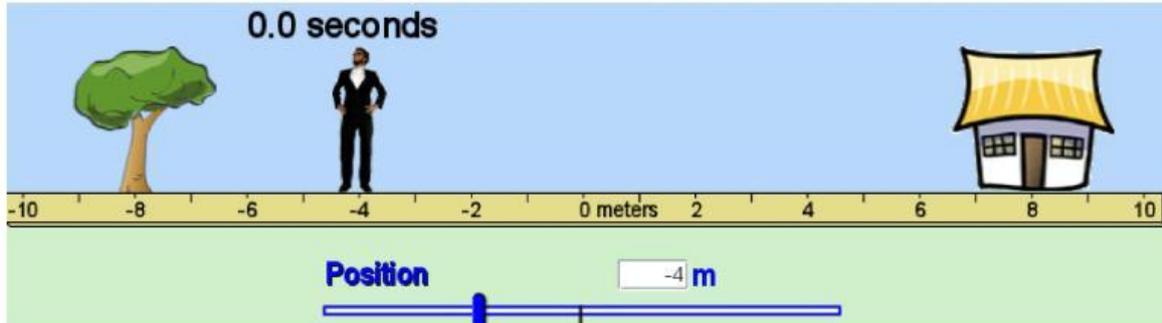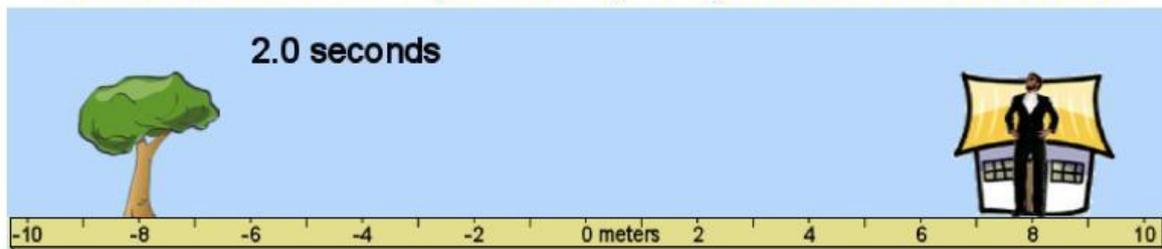
The man below travels from position 1 to position 2 to position 3. It takes him 2 seconds to move from one position to another.
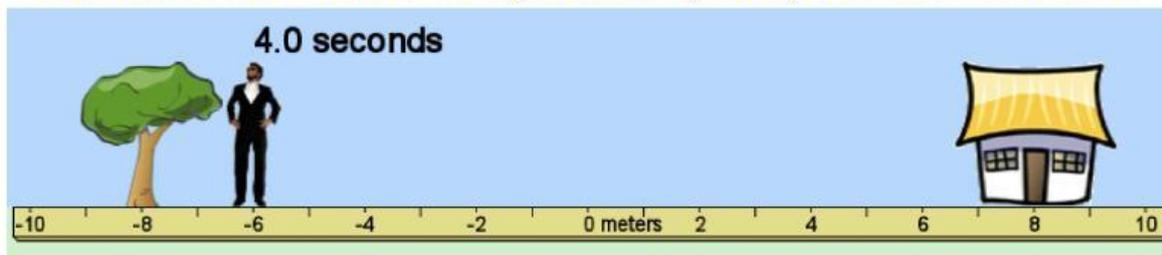
Position 1: Man initially starts at the x= -4 meter mark at t=0 seconds

Position 2: Man travels position 1 (x=4m) to x=8 m in 2.0 seconds

Position 3: Man travels from position 2 (x=8m) to x=-6 m in 2.0 sec


What is the total distance that the man travels moving from position 1 to position 2 to position 3?

What is man's total displacement moving from position 1 to position 2 to position 3?

What is the man's average speed moving from position 1 to position 2?

What is the man's average velocity moving from position 2 to position 3?

Part 2: Click on <u>Moving Man simulation</u>. Go to Charts and type in 0 meters for the position, 3 m/s for the velocity, and 0 m/s² for the acceleration. Run the simulation and watch how the man moves during the first 2 seconds of the man's motion. You should produce the following curves.
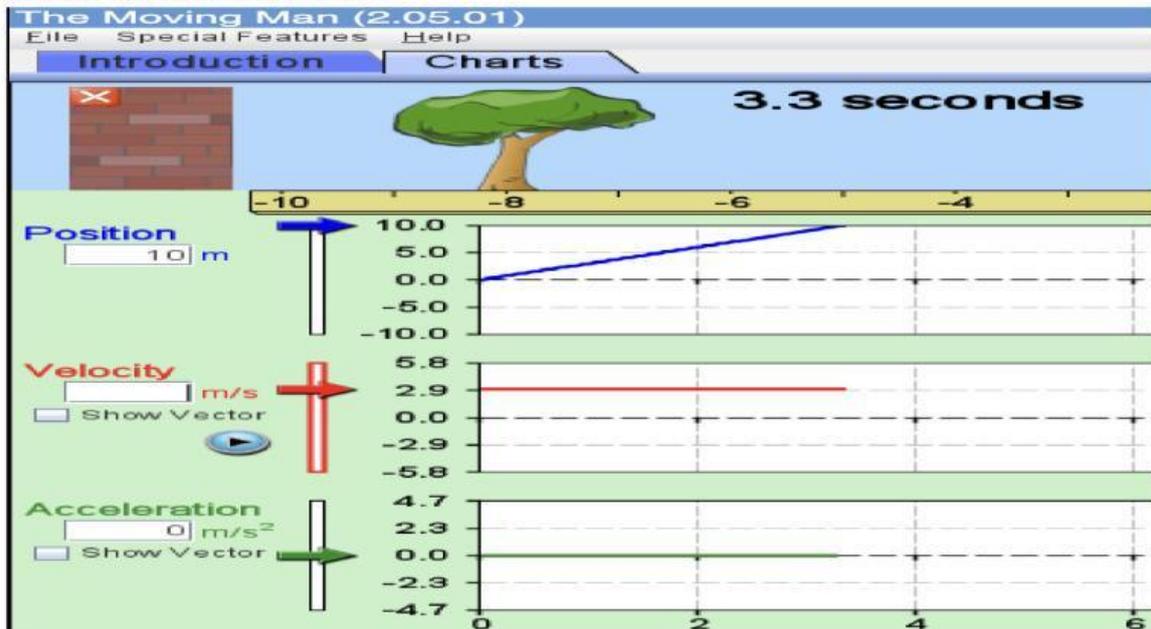
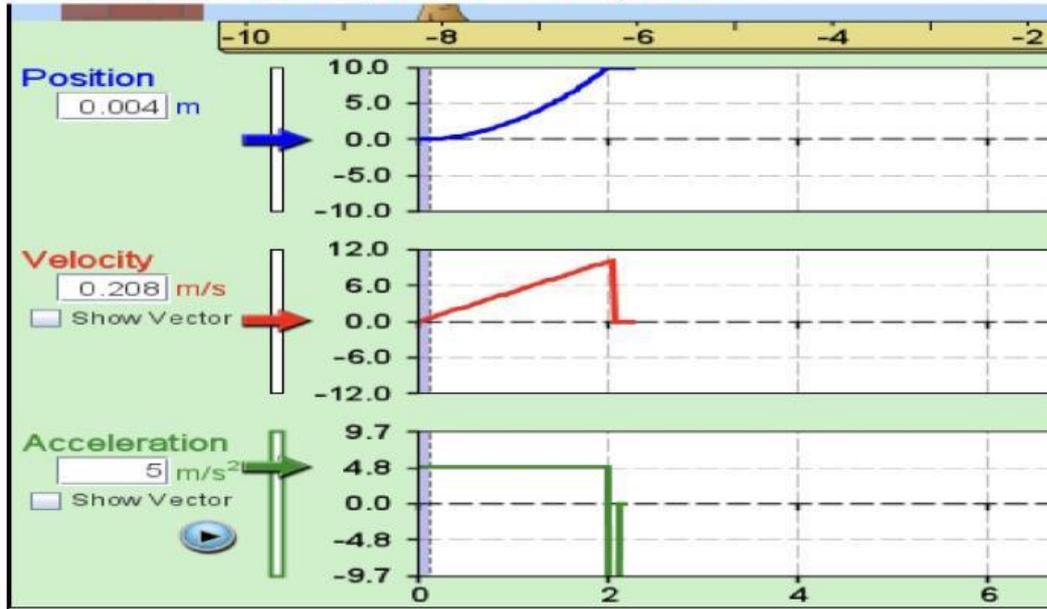Describe how the man was moving after running the simulation.

Rounded to the nearest whole number (no decimals), what was the slope of the position vs. time graph during the first 2 seconds of the object's motion (based on position vs. time graph)?

Rounded to the nearest whole number (no decimals), what was the velocity of the man during the first 2 seconds of the object's motion (based on velocity vs. time graph)?

During the first 2 seconds of the object's motion, what was the area under the curve for the velocity vs. time graph (HINT: Area of rectangle= base*height)? Make sure that you round to the nearest whole number

Looking at the position vs. time graph, what was the displacement of the man during the first 2 seconds of the object's motion?

Go to Charts and type in 0 meters for the position, 0 m/s for the velocity, and 5 m/s² for the acceleration. Run the simulation and watch how the man moves during the first 2 seconds of the man's motion. You should produce the following curves.

Describe how the man was moving after running the simulation.

Rounded to the nearest whole number (no decimals), what was the slope of the velocity vs. time graph during the first 2 seconds of the object's motion (HINT: slope is equal to rise over run)?

Rounded to the nearest whole number (no decimals), what was the acceleration of the man during the first 2 seconds of the object's motion (based on acceleration vs time graph)

During the first 2 seconds of the man's motion, what was the area under the curve for the acceleration vs. time graph (HINT: Area of rectangle= base*height)? Make sure that you round to the nearest whole number.

Looking at the velocity vs. time graph, what was the change in velocity for the man during the first 2 seconds of his motion?

In conclusion:
The slope of a position vs. time graph is equal to the man's _____

The area under a velocity vs. time curve is equal to the man's _____

The slope of a velocity vs. time graph is equal to the man's _____

The area under an acceleration vs. time graph is equal to the man's _____

Part 3:

Look at the following position vs. time curve and drag the man with your cursor to generate the following position vs. time graph below. You will probably have to make several attempts and that is ok.

PART 1   PART 2   PART 3   PART 4
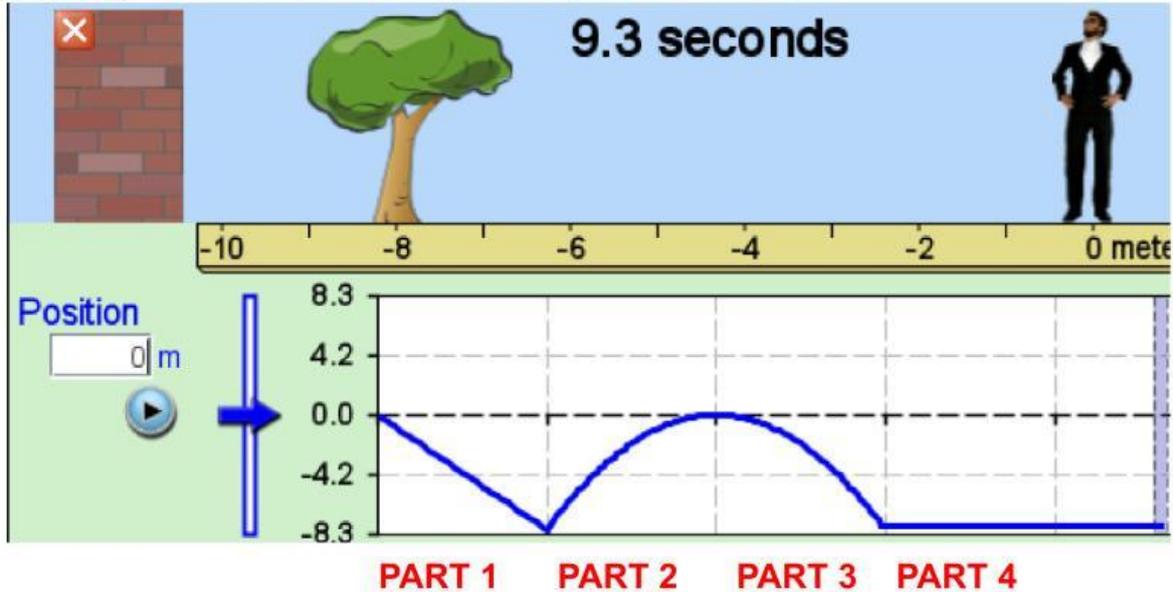
You may see a loom video link to view the man as he moves as shown by the curve: moving man loom video

Describe in words how you moved the man in order to recreate this graph (consider part 1, part 2, part 3, and part 4 of the graph)

In **PART 1** of the graph,

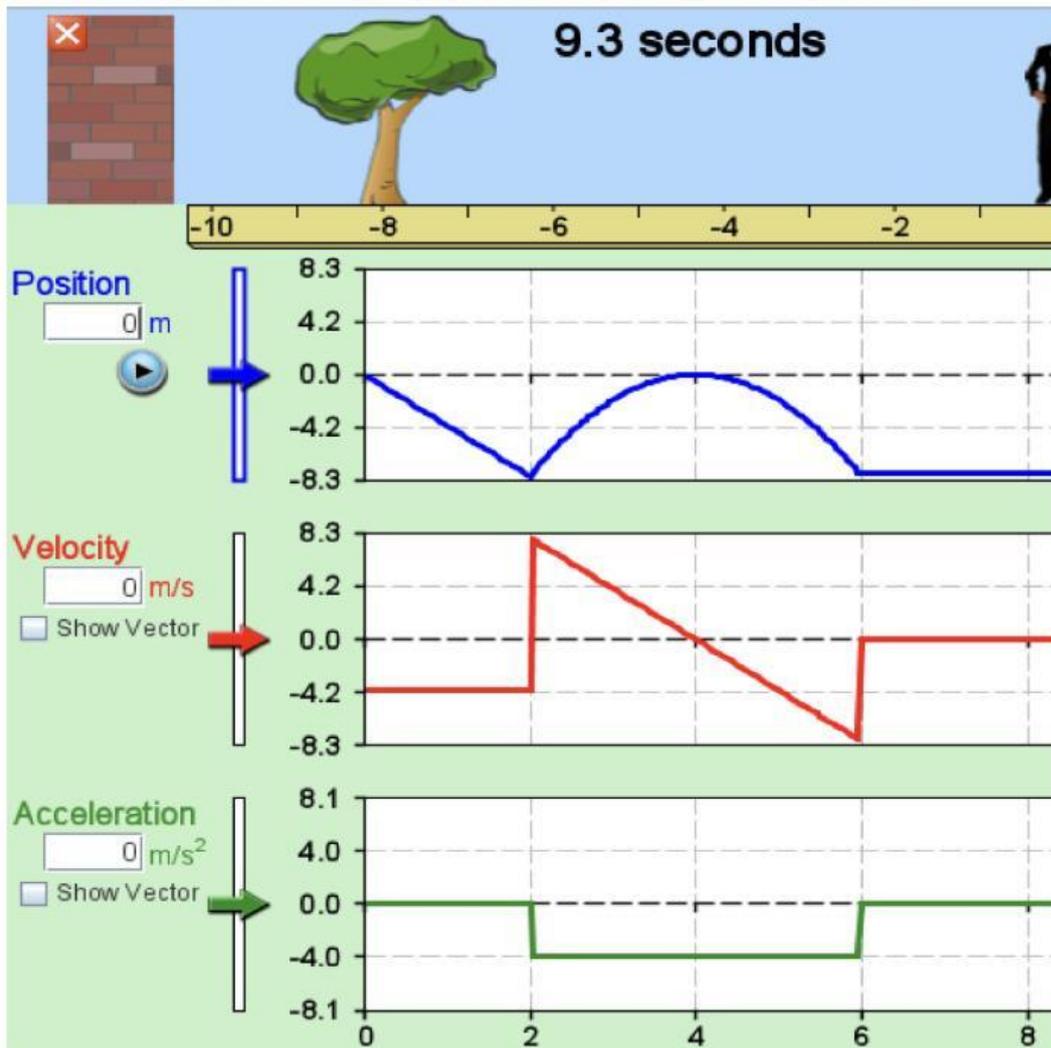_____

In **PART 2** of the graph,

_____

In **PART 3** of the graph,

_____

In **PART 4** of the graph,

_____

For the same motion described above, the velocity vs. time and acceleration vs. time graphs have been included below.

The slope of the position vs. time graph at each point best matches the man's _____ at that point in time.

A flat line on a position vs. time graph indicates the man is _____

A straight diagonal line on a position vs. time graph indicates _____

A curved line on a position vs. time graph indicates the man is _____