Displacement & velocity -time graphs.

Objective

I can design position and velocity- time graphs of an object moving in different ways.

Make observations:

What is the main difference between Position- time graph and Velocity-time graph?

Can the displacement be negative? Why?

Can the velocity be negative? Why?

Procedure:

1. Connect the cart to your devices via Bluetooth

2. Press “Sensor Data collection”

3. Make sure to start from 0 as a reference point

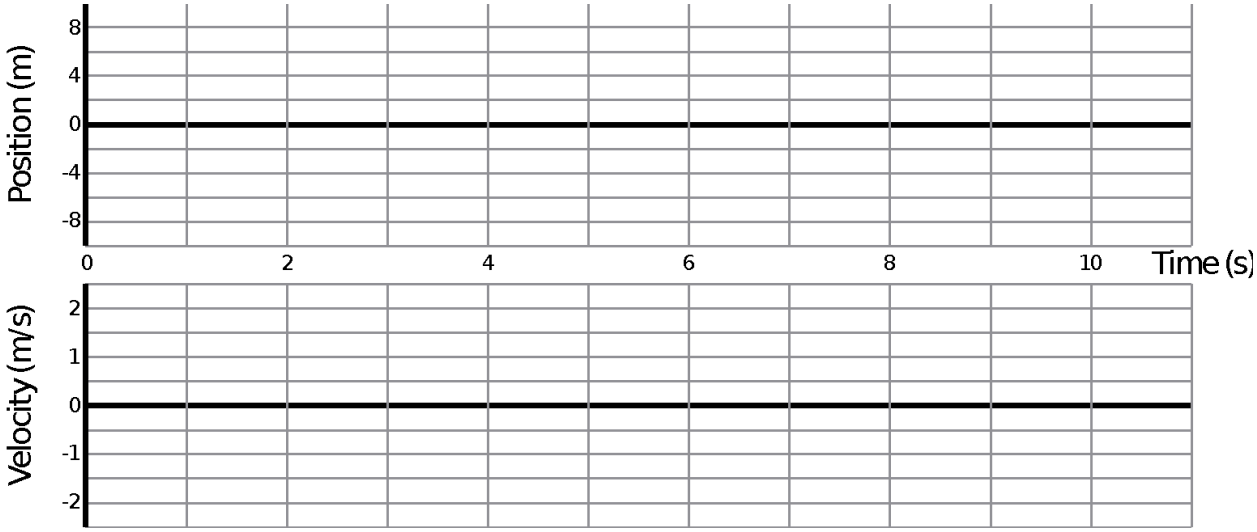
4. Split the page into three graphs (Position, velocity, and acceleration- Time graphs)

5- record the data

1. Use the data given to fill this table

Time (s)	Position (m)	Velocity (m/s)	Acceleration
0.0			
1.0			
2.0			
3.0			
4.0			
5.0			
6.0			
7.0			
8.0			
9.0			
10.0			

2. Plot your data in the graphs below:



According to your graphs...

a. What shape is your position graph?

b. What is the slope of your position graph?

c. What shape is your velocity graph? Is it horizontal, vertical, or diagonal?

Making Connections

1. What happens to the cart when it is accelerating?

2. What is the difference between an object with constant acceleration and an object with constant speed?

3. Complete the following sentences:
   a. *"The slope of a linear position graph tells us the _____ of the object."*

   b. *"The slope of a linear velocity graph tells us the _____ of the object."*

   c. *"For an object moving at a constant speed, we would expect to see a position graph with a _____ shape and a velocity graph with a _____ shape."*

   d. *"For an object moving at a constant acceleration, we would expect to see a position graph with a _____ shape and a velocity graph with a _____ shape."*