**Title**

Kinematics Scientific Investigation

**Hypothesis**

Read through the procedural information for this scientific investigation. For each of the scenarios described in the Procedure and Data Collection section, develop your own hypotheses which describe your expected results. Include sketches or graphics of what you believe a position vs. time and a velocity vs. time graph for each scenario would look like. Record your hypotheses below:

**Data**

Use the data table below to record your data from this scientific investigation.

**Scenario One Data Table**

|  |  |  |
| --- | --- | --- |
| **Time (s)** | **Position (m)** | **Velocity (m/s)** |
| 0 |  |  |
| 2 |  |  |
| 4 |  |  |
| 6 |  |  |
| 8 |  |  |
| 10 |  |  |

**Scenario Two Data Table**

|  |  |  |
| --- | --- | --- |
| **Time (s)** | **Position (m)** | **Velocity (m/s)** |
| 0 |  |  |
| 2 |  |  |
| 4 |  |  |
| 6 |  |  |
| 8 |  |  |
| 10 |  |  |

**Data Analysis**

Create two graphs for each scenario based on the data you collected in your data table. On one graph, plot the time versus position. On the second graph, plot the time versus velocity.

Options for creating and submitting your graphs include:

* Hand-draw the graphs using graph paper and then take a picture of it for submission to the assignment's dropbox.
* Hand-draw the graphs using graph paper and then scan it for submission to the assignment's dropbox.
* Utilize a spreadsheet or graphing program to create the graphs for submission to the assignment’s dropbox.

A digital file containing a grid is available in the Developmental Module.

In addition, provide responses to the following questions based on items in the simulation and the data that you collected. Make sure to completely answer each question.

1. How are position and velocity related?
2. How can the man have a positive position while having a negative velocity?
3. How can the man have a negative position while having a positive velocity?
4. How can the man have a positive position while having a positive velocity?
5. How can the man have a negative position while having a negative velocity?

**Conclusion**

Using the Conclusion section of your Kinematics Scientific Investigation Report, compose three to four sentences describing an overall conclusion based on your data. Were your hypotheses true or false, and how do you know? Use the data and notes that you collected from your simulation experience to form your conclusion. Make sure that you include information that you gained from data analysis to support your conclusion.

**Experimental Sources of Error**

On your Kinematics Scientific Investigation Report, provide responses to the following questions: Are there any sources of error? If so, what are they, and what could be done to minimize error?



Once you have completed the Kinematics Scientific Investigation Report, please submit your work to the dropbox.