Physics 40 1D Kinematics Project

## Objective: Students will create a motion-centric scenario and detail it using equations as well as graphical representations.

# Project must contain:

* A well thought out and detailed story-like scenario involving one dimensional motion. Since it is a STORY, it should involve at least three or four sentences.
* The scenario must contain at least THREE different parts where the motion is different. For example, a car may accelerate, then travel at a constant speed, then slow down to a complete stop, then reverse.
* A position-time graph for all the motion described in the scenario
* Numerical information & ALL ACCOMPANYING MATHEMATICAL WORK for **each part** of the motion scenario that includes:
  + The distance covered
  + The initial velocity (if velocity is changing)
  + The final velocity (if velocity is changing)
  + The average velocity
  + The acceleration
  + The time elapsed
* The student will have to set 2-3 of these values in the scenario (depending on the type of motion occurring) and then solve for the remaining values.

# Notes:

* Graphs can be done on a computer or by hand, as long as they are **neat** and contain all necessary information (labels, title, etc)
* All the requirements can be presented through any media the student deems most accessible to them *provided all information required is presented* ***neatly***
* *ALL FOUR OF THE KINEMATIC EQUATIONS MUST BE USED AT LEAST ONCE*

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| --- | --- | --- | --- | --- | --- |
| Category | 0-2 | 3-5 | 6-8 | 9-10 | Points Earned |
| Story | Scenario has one part or is missing entirely | Scenario has at least two parts. Little effort has been put into creating a story | Scenario has 2+ points, but may be hard to follow or not ‘story-like’. Reader understands most of what happened. | Scenario has 3+ parts to it and reads like a brief story. Reader understands exactly what has happened. | ( x 1.5) |
| Position Graph | Position graph is missing or illegible | Position graph incorrectly represents the motion described in the story and/or lacks all labels and title | Position graph describes the motion of the object but may be mislabeled, mistitled, or missing some information | Position graph correctly describes the motion of the object. Graph is correctly labeled and titled. | ( x 1.5) |
| Numerical Calculations | Very few numerical calculations are present & correct or are missing altogether | Half of the required calculations are present. Some required work may be missing. Some calculations may be incorrect | The majority of the required calculations are present. Some required work may be missing. A few calculations may be incorrect. | All the required calculations are present and correct. All required work is present. | ( x 1.5) |
| Presentation | Project is sloppy and illegible | Project is legible, but minimally creative and somewhat sloppy. | Project is creative but may have some neatness issues | Project displays the student’s creativity. Effort has been put in to make the project neat and visually appealing. | ( x 0.5) |

Total Score: \_\_\_\_\_\_\_\_\_\_\_