**How fast am I? Physics Assignment**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Partner: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Partner: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Partner: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Goals:**

* To describe motion through data, calculations and graphs
* To understand the connection between the data collected and the graph produced
* To make the connections between the slope of a graph and the velocity and acceleration of a 2 different motion activities
* To show how distance, time, velocity and acceleration are related
* ***As this is your last MYP assignment Science 10 please use this opportunity to show us what you have learned this last school year.***

**Minimum Requirements:**

Group of 3-4 students



A piece of equipment with wheels



Distance of 40m including 8 intervals



A ***motion variable*** you wish to explore. For example:

* skateboard up a hill 40m vs. rollerblade up a hill 40 m (***in this case the variable is the mode of transportation***)
* skateboard up a 64 m hill vs. skateboard down that same 64 m hill (***in this case the variable is the path taken***)

Determine distance, displacement, time, speed and velocity for each motion variable

* in data table and graph format (4 data tables and 4 graphs)

When describing **trends** in the data/graphs: Use the following **vocabulary** – distance, displacement, increasing, decreasing or constant velocity, speed, positive, negative or zero acceleration.



Refer to the “***My Investigation Report***” sheet for details about the format and contents of the final report.

Planning day #1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Planning day #2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lab day #1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lab day #2 (if needed): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Data Analysis day: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Report due: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Assessment Rubric – Scientific Inquiry (D) and Data Processing (E) and Attitudes in Science (F)**

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| --- | --- | --- | --- |
| **Beginning (0)** | **Approaching (1-2)** | **Accomplished (3-4)** | **Exemplary(5-6)** |
| **Scientific Inquiry (D)** | | | |
| The student does not reach a standard described by any of the descriptors given to the right | -The student **attempts to state** a focused problem or research question.  -The method suggested **is incomplete**.  -The student **attempts to evaluate** the method.  -The student **comments** on the hypothesis based on the outcome of the investigation – but does not mention validity.  -The student suggests **one** improvement to the method or one suggestion for further inquiry when relevant. | -The student **states** a focused problem or research question and **makes a hypothesis** but **does not explain it** using scientific reasoning.  -The student selects **appropriate** materials and equipment and writes a **mostly complete** method, mentioning **some of the variables** involved and how to manipulate them.  -The student **partially evaluates** the method.  -The student **comments** on the validity of the hypothesis based on the outcome of the investigation.  -The student **suggests some** improvements to the method or makes suggestions for further inquiry when relevant. | -The student states a **clear** focused problem or research question,  **formulates a testable hypothesis** and **explains** the hypothesis using scientific reasoning.  -The student selects appropriate materials and equipment and writes a **clear**, **logical** method, mentioning **all of the relevant variables** involved and how to control and manipulate them, and describing how the data will be collected and processed.  -The student **evaluates** the method, commenting on its **reliability** and **validity**.  -The student **comments** on the validity of the hypothesis based on the outcome of the investigation.  -The student suggests **realistic** improvements to the method and makes suggestions for further inquiry when relevant. |
| **Processing Data (E)** | | | |
| The student does not reach a standard described by any of the descriptors given to the right | -The student **collects some** data and **attempts to record** it in a suitable format.  -The student **organizes and presents** data using **simple** numerical **or** visual forms.  -bricsment RThe student **attempts to identify** a trend, pattern or relationship in the  data.  -The student attempts to draw a conclusion but this is **not consistent with** the interpretation of the data. | -The student collects **sufficient** relevant data and **records** it in a suitable format.  -The student organizes, **transforms** and presents data in numerical and/or visual forms, **with a few errors or omissions***.*  -The student **states** a trend, pattern or relationship shown in the data.  -The student draws **a conclusion consistent with** the interpretation of the data. | -The student collects **sufficient** relevant data and **records** it in a suitable format. (data table - including titles and units, 40 meters minimum and 8 intervals)  -The student organizes, **transforms** and presents data in numerical and/or visual forms **logically** and **correctly**. (distance vs. time and velocity vs. time graphs – include title, axes labeled, appropriate units)  -The student **describes** a trend, pattern or relationship in the data and comments on the reliability of the data. (find the slope and describe the motion – using the minimum vocabulary)  -The student draws a **clear** conclusion **based on** the **correct interpretation** of the data and **explains it** using scientific reasoning. |
| **Attitudes in Science (F)** | | | |
| The student does not reach a standard described by any of the descriptors given to the right | The student **requires some guidance** to work safely and **some assistance** when using material and equipment.  The student requires **some guidance** to work responsibly with regards to the living and non-living environment.  When working as part of a group, the student needs **frequent reminders to cooperate with others**. | The student **requires little guidance** to work safely and **little assistance** when using material and equipment.  The student **works responsibly** with regards to the living and non-living environment.  When working as part of a group the student **cooperates with others on most occasions**. | The student **requires no guidance** to work safely and uses material and equipment **competently**.  The student **works responsibly** with regards to the living and non-living environment.  When working as part of a group, the student **cooperates with others**. |