

Pre-Lab Assignment -20pts

Read the entire lab & Complete Pre-Lab in your lab composition notebook.

Do not write on the backs of pages.

The first page is for Teacher Sign-offs that occur at various points in the lab:

Use the following format for the Teacher Signature Sign-off page.

Teacher Signature Sheet for _____

(put lab title here)

Below is an example of the Teacher Signature Sheet. You'll need to read the lab and create a data table similar to the example below based on the # of sign-off points for the lab.

Teacher Signature Sheet for ...the need for Speed

Question Number	Section	Teacher signature
----	Pre-lab	
7	Procedure	

The second page begins the Pre-lab:

The pre-lab should follow the steps below:

Be sure to "label" each part of the pre-lab

Title of lab and unit (Linear Motion)

- "Define" the following terms: independent variable, dependent variable, displacement, distance.
- In a sentence, write the purpose of the lab.
- Write a brief summary of what you will be doing (the procedure).
- Read through the lab and list the "key points" (as you determine)
- Write and answer all preliminary questions.
- Have your teacher initial your pre-lab before you begin the lab.

*****Be sure to have your teacher sign off on the data table at the various check points during the lab.**

...the Need for Speed!

Introduction

Although you may never have given it much thought to your activity the last time you walked from one place to another, you were actually observing some basic physics concepts. you exhibited motion. Motion is movement from one location to another in a certain amount of time and in a given direction In this activity you will take measurements of your motion and use those measurements to describe and determine relationships moving, objects.

Preliminary Questions - To be answered individually.

1. When given a clear and open area to walk, do you walk at a consistent pace, or do you speed up and slow down?
2. Within your group, who do you think naturally walks faster? Explain your choice.
3. How fast do you think you will walk in the hallway?

MATERIALS

- | | |
|--------------------------------|---------------------------|
| * stopwatch | * 1 strip of masking tape |
| * metric stick or tape measure | * 4 marking "blocks" |

PROCEDURE

1. Copy the data table from the board in your lab notebook.
2. Write your group name and class period on your masking tape.
3. Go to your assigned hall location. Place the masking tape on the floor. This will be your starting point.
4. Now for the walking! One student will walk from the starting point toward the end of the hallway, another will start the timer and call out each 5 second interval. A third -student will **place** the marking "blocks" on the floor next to the walker at each 5 second interval.
5. Each walker should walk a total of 20 seconds. Ready...Set...Walk!
6. Measure and record the distance (**to the nearest 0.01 cm**) and the direction from one marker to the next This is the interval DISPLACEMENT. Your times are already recorded properly for you on your data table.
7. *****Have your teacher approve your first set of data before you move your marking blocks.*****
8. Repeat steps #4 and #5 for each group member.
9. *****Have your teacher approve your data before you continue.**

Analysis (to be completed in your lab notebook)

1. Was the total time for **each person** the same? Explain why or why not.
2. Were each of **your** interval displacements the same? Explain why or why not.
3. Calculate your total distance at 5 s, 10 s, 15 s, and 20 s. Explain how you determined the distances.
4. Was the total distance after 20 s the same for **each person**? Explain why or why not.
5. As a class we will calculate your speed during **the first** five second interval;
you must **show all your work (K-U-E-S)**. Calculate **(K-U-E-S)** the speeds of the other three intervals.
6. Calculate **(K-U-E-S)** the average speed for your entire walk.
7. *****Your teacher needs to approve your work before you continue.**

Refer to the graphing tutorial for assistance with #8 - 13

8. What is the independent variable of this experiment? dependent variable? Explain each answer.
9. Construct a Distance v. Time graph of your walk on a piece of graph paper.
10. *****Your teacher needs to approve your work before you continue.**

Analysis (continued)

11. Which group member's graph appears to have the steepest sloped line? the shallowest slope?
12. What specific information do you think the slope tells you about each member's walk?
13. Calculate the slope of your graph (**K-U-E-S**). What quantity does the slope measure?
14. *****Your teacher needs to approve your work before you continue.**

15. Use the **Graphical Analysis** program to construct a Distance vs. Time graph showing all group members on one graph. This graph should look like each person's graph was drawn on the same graph paper. *In the "NOTE" box on your graph type in the names of each person in your group.*
There is a Reference sheet for Graphical Analysis at your lab station which will assist you with the program.
16. Use the Graphical Analysis program to determine the slope of each person's data. Write down the values Graphical Analysis provides for each slope. Explain any differences between your slope calculations (#13) and the slopes provided by Graphical Analysis .
17. Save the graph as "**need for speed**".
18. *****Your teacher needs to approve your work before you print your graph.**
19. Print one copy of the graph for the group report.

Individual Report- 25 points

Cover Sheet

Title, name, group members, date, class period

Conclusion - Now that you have completed the lab procedure,

1. Restate the purpose of the lab investigation, "The purpose of this lab was . . ."
2. **Re-answer** all **three** of the preliminary questions. Then explain why you were right or how you changed your thinking if you were wrong. Use information from your data/graph as support evidence.
3. What measurement quantity does the slope of your graph represent?
4. List errors or factors influencing the lab, including equipment, and student technique.