Name: _____ Period: _____ Date: _____

LAB: Light-Year as Distance!
Astronomy

Introduction:
The light year is a unit used to measure and express huge astronomical distances that would be difficult to understand if they were expressed in kilometers or even sometimes AU's. A light year is a measurement of distance, even though it uses a time unit, the year. For example, the distance from the star Sirius to Earth is approximately 81.365 trillion km. This distance is too large for most people to imagine or understand. If calculated correctly, astronomers ca n say that the distance from us to Sirius isn't 81,365,000,000,000 km or even 543,884 AUs, but rather about 8.6 light-years away… that's a little better.

Because many struggle with seeing light-years as measurements of *distance* rather than time, we're going to see how your "light-year" pans out. We are going to be measuring a distance and seeing how far you can travel within a given time frame. This will be your version of a light-year, how ***FAR*** you can travel during a given time frame. Follow the procedure instructions below and let's get started!

Procedure:

1. Listen for your instructor to give you the designated location for the lab… hopefully outside!
2. Select which partner will walk and which will measure.
3. Starting at one end, have the walking partner walk heel-to-toe in a straight line for exactly one minute.
4. Use the meter stick to measure how far your partner walked, to the nearest meter. Record this distance in the data table.
5. Repeat steps 2 and 3 three more times.
6. Calculate the average of the four measurements and record it in the data table.
7. The average you calculated is the distance you can walk heel-to-toe in one minute. We will call this distance a "student-minute".

Data Table:

Distance Walked (m)				
Trial 1	Trial 2	Trial 3	Trial 4	Average

Analysis:
*Answer each of the following in **several, complete** sentences for full lab credit!*

1. Compare the length of your student-minute to the calculations made by other groups. Are all the student-minutes the same? How are they similar? How are they different? Explain.

2. How are student-minutes similar to a light year? How are they different?

3. How many meters are in 3 of your group's student-minutes? (Show your work!)

4. How many of your student minutes are there in 5,000 m? (Show your work!)

5. The distance from Mrs. Witucki's classroom to the end of the hallway is about 75 m. What is the distance in student-minutes according to your group?

6. How much time would it take you (if you were walking heel-to-toe) to travel a distance of 900 m? (Show your work!)