Name _____ **Period** _____ **Date Due**_____ **EN** _____

Measuring Speed

Purpose:

The purpose of this activity is to give you practice in measuring average speeds, and to get you thinking about average and instantaneous speeds.

This activity has two parts. First, you will calculate some average speeds. Then, you will use these calculated average speeds to determine an unknown distance.

Important: You will be working in a group of 3-4 students, but **this is not a group activity**. You will collect your own data, and make your own calculations. Each student will submit their own results and conclusions.

Equipment:

meter stick stop watch

Procedure:

Part 1 - Calculating Average Speed:

1. You need to decide on an "event" for the students in your group to participate in. This event could be walking, running, walking backwards, walking heel-to-toe, hop, skip, crawl, whatever (**HINT:** The other students in your group will be planning an event for *YOU*, too...)

2. It is your job to determine the average speed for each student in your group for your event. Think about what you need to measure to determine the average speed, and how you will go about making the calculations. Then construct a data table to record your data and display your results. Be sure to label the columns and indicate the units of measurement for each quantity. You should allow for 2 to 3 trials for each person in your event.

Sample Data Table for Part 1 - Measuring Average Speed

Distance = _____ meters

Person	Time 1 (sec)	Time 2 (sec)	Time 3 (sec)	Average Time (sec)	Average Speed (m/s)
		Sample			

3. Supervise your event, and record your data. Each person in your group (except you) will "run" in your event, and you will participate in the event of every other person in your group.

IMPORTANT:

1. It is more important to move at a consistent (and **safe**) speed than it is to go fast. There are no prizes for *"winning"* these events!

2. If a person in your group suggests an activity that you think is unsafe, degrading, or will get your clothes dirty, **you have the right to insist that they pick some other "event"**. The teacher will settle any disagreements that cannot be settled among the participants.

Part 2 - Calculating an Unknown Distance:

When you have finished Part 1, report to your teacher. It is not necessary that your calculations be complete.

1. Your teacher will show you an "unknown distance". Time your participants in your event over this distance. Record the results in a data table.

2. Use your average speed calculation from Part 1 and the time required to cover the "unknown distance" to calculate the "unknown distance". Put your results in the data table.

3. Measure (and record) your "unknown distance" with a meter stick, so you can judge the accuracy of your calculation in number 2.

Sample Data Table for Part 1 - Measuring an Unknown Distance

Person	Time 1 (sec)	Time 2 (sec)	Time 3 (sec)	Average Time (sec)	Ave. Speed (m/sec)	Distance (meters)
		Sample				

Questions:

1. How do your measured and calculated values for the "unknown distance" compare? If there is a large discrepancy, why do you think it occurred?

2. How is the average speed of a person related to the total distance covered and the total time taken?

3. If the average speed of a person was 1.2 meters/second, does this mean that their speed was exactly 1.2 meters/second the whole time? Is the average speed related to the maximum or minimum speed of the person? Explain why you think so.