

Determining Speed Lab

Name: _____

Date: _____ Period: _____

***Important: You will be working in a group of 2-3 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.

Purpose: to give you practice in measuring average speeds, and to get you thinking about average and instantaneous speeds.

Materials:

meter stick, stop watch (or watch with a seconds hand)

Part 1 - Calculating Average Speed:

It is your job to determine your average speed. You will need to help other students collect their data. Think about what you need to measure to determine the average speed, and how you will go about making the calculations.

Note: It is more important to move at a consistent (and safe) speed than it is to go fast. This is **NOT A RACE** and there are no prizes for "winning!"

Part 1 Data and Equations:

$$\text{Speed} = \text{distance (m)}/\text{time}$$

$$s = d/t = \text{m/s}$$

Trial #	Distance (m)	Time (s)	Speed (m/s)
1			
2			
3			
Average			

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 walking this distance. Record the results in the data table provided.
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. Your teacher will measure the "unknown distance", so you can judge the accuracy of your calculation in number 2.

Part 2 Data and Equations:

$$\text{Distance (m)} = \text{Speed (m/s)} \times \text{time (s)}$$

Trial #	Time (s)	Speed (m/s)	Calculated Distance (m)	Measured Distance (m)
1				
2				
3				
Average				

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 net 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.