

Graphing Average Speed Lab

Purpose: To read and create a graph depicting different speeds.

Procedure:

1. Determine who will be your mover, timer and recorder.
2. Measure out a 45-meter course and divide it into 3 equal segments.
3. Determine order of events for each segment. (When will you run, walk, and walk heel to toe)
4. Time how long it takes to move each of the 15 meters.
 - a. The timer and mover should not stop, but rather continue straight from one event to the next
 - b. The timer should call out times after each 15 m event so the recorder can write down cumulative times.

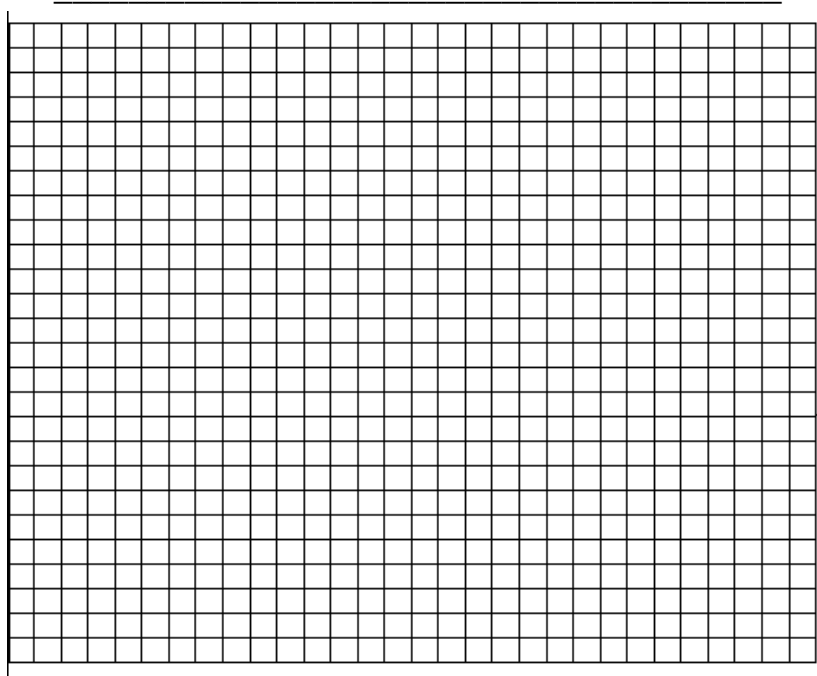
Data: *It took Alejandro 20 seconds to walk heel to toe for the first 15 meters, then he walked the next 15 meters which took another 6 seconds. He ran the last 15 meters in only 2 seconds.*

Fill in the table below of distance vs. time. Record the type of motion used for each distance. You will be adding up your distances for a *cumulative distance* because we are going to graph **average speed**. Your time will be cumulative as well.

Type of motion	Distance (cumulative)	Time (cumulative)
	0 m	0 sec
	15 m	
	30 m	
	45 m	

Analysis:

Make a graph of the three motions as one continuous line. Plot total distance versus total time for each type of motion. Connect the dots. Time always goes on the x axis and distance on the y axis. Make your graph as large as possible.



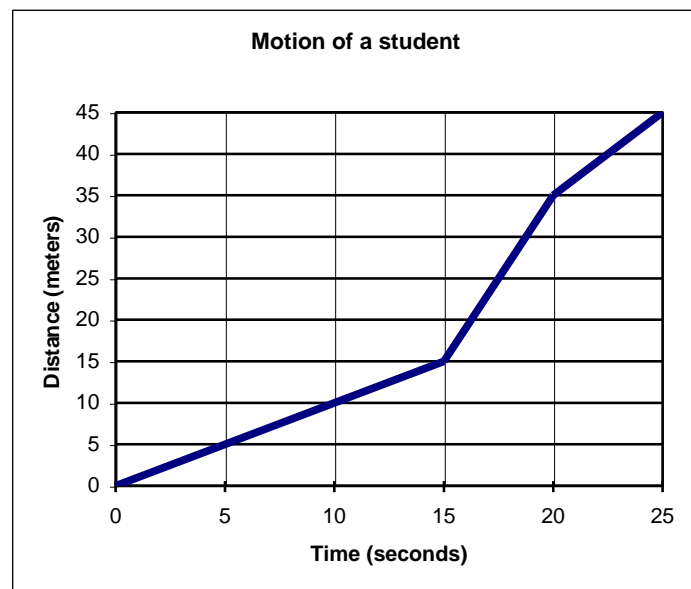
1. Now use a ruler to carefully draw a line from your first to your last point. The slope of this line represents your average speed.

Conclusion Questions:

1. What is the average speed? Show your work.
2. What was your average velocity during the lab?
3. Did you move at a constant speed during the duration of the entire lab? Explain.
4. What 2 factors must be measured to determine speed?

Use the graph to the right to answer the following questions.

5. What is the manipulated variable in the graph?
6. What is the responding variable in the graph?
7. Label where the student is moving the fastest and slowest speeds on the graph to the right.
8. How did you determine fastest and slowest speeds?
9. What is the speed at 10 seconds into the graph?



10. What is the average speed between 15 seconds and 20 seconds on the graph? (Show your work)
11. How much faster is the person moving in the fastest segment compared to the slowest segment? In other words, what is the difference of speed? (Show your work)
12. Which graph shows the motion of someone moving at a constant speed?

