

Iona Preparatory School Science Department

Experiment: To examine the relationship between distance and time for a uniformly moving object.

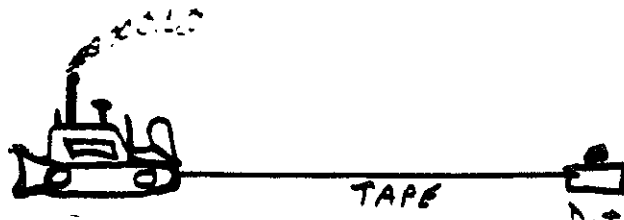
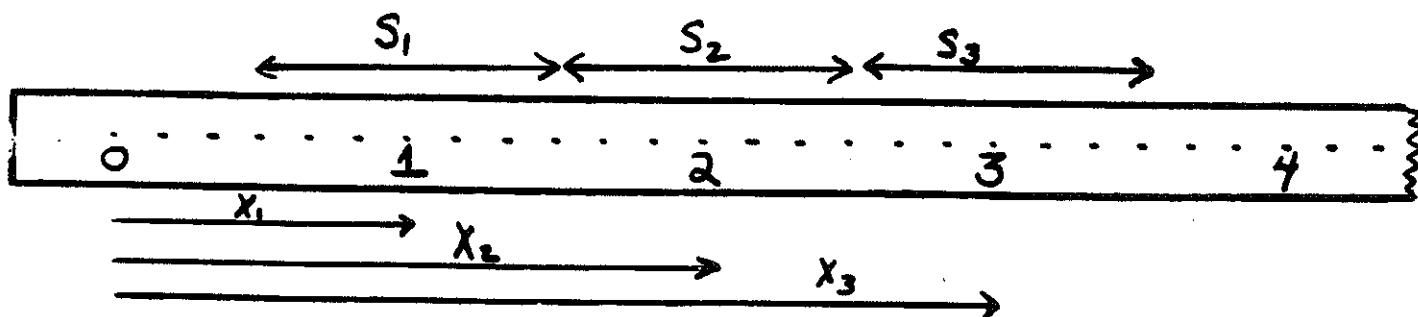
In this experiment, a simple dot timer is used to make dots on a paper tape at regular intervals of time. If the tape is pulled through the timer, the distance between dots provides a record of how far the tape moved in the time interval between two dots.

The P.Y. Joe will be used to pull the timer tape through the dot timer. The driver will be urged to keep the speed of the tractor as constant as possible. When enough tape has been produced, it will be divided up and distributed to the class.

Analysis:

1. Beginning at the first dot, assign a number to every sixth dot. The first dot is #0, the sixth is #1, the 12th is #2, etc. (Since the dots are made at the rate of 60 dots/sec, numbered dots will represent time increments of 0.1 second.)
2. Measure the distance from dot #0 to each of the other numbered dots. Call these distances x_1 , x_2 , etc.
3. Beginning at dot #1, mark off an interval of 3 dots (unnumbered) on each side, and measure this interval. Call this s_1 . Repeat for all other numbered dots.

Use the following diagram as a guide to the above instructions:



4. Now plot the data points on two different graphs as follows:

- (a) Time along the X-Axis
Distance from start along the Y axis
- (b) Time along the X-Axis
Velocity during interval along the Y-Axis.

5. Determine the slope and Y-Intercept of each of the graphs in # 4 above. You may do this by "eyeballing" it from your graphs, or by using a computer program.

6. Writeup: as usual:

- Diagram
- Procedure
- Data table (see below)
- Graphs
- Conclusion:

BASED UPON YOUR GRAPHS, what conclusions can you arrive at about the speed and acceleration of the tank during the experiment?

Your DATA TABLE should look like this:

Dot #	Time (sec)	Distance from start (Cm) [Xn]	Length of interval (cm) [Sn]	Velocity during interval (cm/sec) [Sn*10]
1	.1			
2	.2			
3	.3			
4				
5				
6				
7				
.				
.				
.				