Title: Push That Cart or Graphical Analysis of Motion

Purpose: Describe and analyze the motion of a pushed cart using both distance vs. time and acceleration vs. time graphs.

Procedure: 1. Rip off about 1.5 m of white paper tape from the spool.

2. Feed paper under carbon disk on timer , through staples, under clapper, and tape to back of cart.

3. Send lab partner to catch cart, turn on multi-plug-in strip to start timer, relax a few seconds, push cart straight (with a medium push) to partner, shut of multi-plug-in strip, detach paper strip, and return cart.

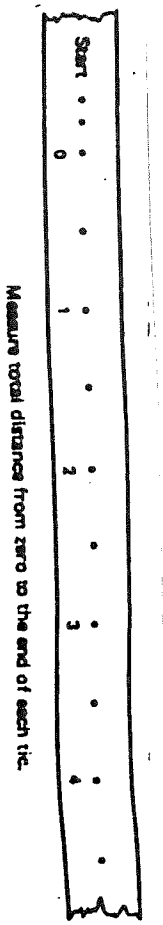
4. Take strip back to your desk and number the first or second distinguishable dot 0 (zero).

5. Skip a dot and number the next dot 1, skip a dot and number the next dot 2, etc. until you've numbered about 26 dots.

6. Measure the distance between numbered dots and record in your own data table.

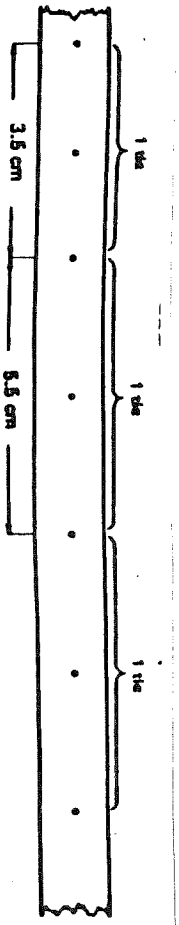
7. Figure out total distance by adding current distance to previous total distance and record same table.

8. Determine instantaneous velocity of cart at each distance interval by 1 tic of time and record. Yes, it will be the same numbers as the distance column but note it is different units (because of dividing by 1 tic each time).



Data Table:

TIME	DISTANCE	TOTAL DISTANCE	VELOCITY (instantaneous)
(tics)	(CM)	(CM)	(cm/tic)
0	0	0	0
1			
2			
...26			



GRAPHS: 1). Graph in Excel a Total Distance on the y axis vs. time on the x axis.

2). Graph in Excel a Velocity on the y axis vs. time on the x axis.

Questions: Write on **each graph** exacting where on the graph it is currently happening to the cart the following.: 1). Not moving 2). Pushing 3). Let go 4). Coasting

Conclusion: Remember, re-read your purpose and base your conclusion on your purpose.

Summary: This is your own personal comments to yourself or another person who may do the lab as to what you would do differently if you had the time to do the lab over and/or if the lab was worth doing and why or why not. What did you learn by doing this lab? The BIG PICTURE.