Constant Velocity or Acceleration?

Activity Summary from Last Lesson:

1. Obtain a roll of ticker tape and cut off approximately 2 x 1 meters.

2. Set up a ticker tape timer apparatus on a desk.

3. Place one end of the tape through the ticker tape timer apparatus and tape this end to the lower back of one person.

4. Start the ticker tape timer.

5. Start walking in a straight line at a constant velocity until all of ticker tape goes through the timer. Stop the timer and detach the paper from your partner's back.

6. There should be a series of dots on the paper. The timer makes one dot every $1/50^{th}$ of a second, or 0.1 seconds pass for every 5 dots.

7. Measure the displacement for every series of 5 dots (over most of the meter) and record this displacement (m) in a data table. Avoid using the first few dots on the paper as your partner's velocity would not be constant over the first few cm of that m of motion.

8. The time for each interval should be recorded as follows: 0.1s for interval 1, 0.2s for interval 2, 0.3s for interval 3, etc.

9. Create a graph of displacement (m) vs. time (s) using Microsoft Excel or another graphing program. {See the attached appendix for sample sets of data and their accompanying graphs.}

Activities

Using both tape samples calculate the average velocity of the tape pulled at a steady rate.

Ticker tape activity 1 August 2008

(Cut the tape up into 0.1 s or 0.2 s intervals, stick the pieces side by side on some graph paper If the distance moved for each time period is similar then you have a constant velocity

Repeat this activity with the second tape. The dots spaces should increase here.

Use the first dots to calculate U and the dots further down the tape to calculate V, find the acceleration by using;

$$a = V-U/\ t$$