



Figure 1

- The recording timer will mark the tapes for both carts at the same time. Place two carbon disks back to back with one tape above and one tape below.
- If the spring mechanism has more than one notch, choose the first notch. Press straight down to release the spring mechanism so that you do not affect the motion of the carts. Let the carts move at least 1.0 m before you catch them, but do not let the carts fall off the table.

ANALYSIS

- 1. Organizing Data** For each trial in your experiment, find the velocities v_1 and v_2 . Because the carts are moving in opposite directions, assign one of the carts a negative velocity to indicate direction.
- 2. Organizing Data** For each trial, calculate the momentum of each cart by multiplying its mass by its velocity.
- 3. Organizing Data** For each trial, find the total momentum of the two carts.
- 4. Applying Ideas** For each trial, what is the total momentum of the two carts before they start moving?

CONCLUSIONS

- 5. Drawing Conclusions** In this situation, conservation of velocity would mean that the total velocity for both carts is the same after the spring mechanism is released as it was before the release. Is velocity conserved in this experiment? Support your answer with data from the experiment.
- 6. Drawing Conclusions** Is momentum conserved in this experiment? Support your answer with data from the experiment.
- 7. Evaluating Methods** What source of experimental error might have affected your results?
- 8. Evaluating Methods** How would using two carts with identical masses affect your answers to items 5 and 6?