

### Conservation of momentum and energy

You will place two carts on a track, one with low mass and one with high mass. After releasing the spring, one will go right and one will go left.

Answer the following questions.

- 1a) Which cart do you expect will move with greater speed after the spring is released?
  - b) Which of the two do expect will have greater momentum?
  - c) Which of the two do expect will have greater kinetic energy? (Remember the example of the bullet and the gun.)
2. Place the carts on the track such that the carts hit their respective ends at the same time after release. It may take a few trials to find this position.

3. Use a stopwatch to measure the time for each car to hit its end.  $t = \underline{\hspace{2cm}}$  sec.

4. Measure the distance and the mass of each cart (be sure to measure the correct distance).

$m_L =$

$d_L =$

$m_H =$

$d_H =$

5. Calculate the velocity, momentum and KE of each cart. (Clearly identify the each value.)

**Conclusions:** Were your answers to the questions in 1 correct? Which answers would you change?

6. Find the joules of potential spring energy stored in the spring.