

# Momentum Activity

# Pre Lab

**Names:** \_\_\_\_\_

**Purpose:**

In this activity you are going to investigate momentum.

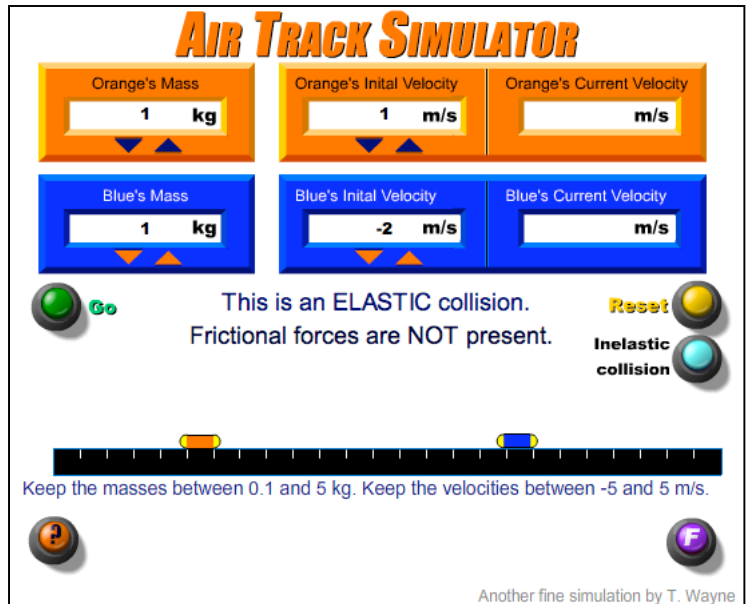
**Procedure:**

Open up the web browser and go to the URL below. It is case sensitive.

<http://www.mrwaynesclass.com/teacher/Impulse/SimFriction>

If the link will not open, then reload the page again by pressing ⌘-R. Sometimes this happens because everyone is trying to read the same file at the same time.

This Flash applet simulates the collision between two carts on a track. There is no friction on the track unless the "Friction" button is pressed. Change the masses and velocities then press the "Go" button. Pay attention to the current velocity numbers in the boxes.



- Press the "GO" button and watch what happens.
- Press the "Reset" button. This time make the necessary observations to fill out the chart below. Lower case "p" stands for momentum.

Enter your own numbers for the initial velocity. Choose any speed between -5 and 5 that is an integer and not zero. Type it as the initial velocities. Run the simulation with your numbers then fill out the rest of the chart. **DO NOT CLICK THE FRICTION BUTTON** and make the collision an elastic one. (You do not need to print this page. Recreate the chart and write the answers next to a set of numbers.)

Cart	Mass	Initial velocity before the collision	Final velocity after the collision	Each Cart's Momentum Before the Collision $p = (\text{mass})(v_{\text{INITIAL}})$ Calculate this value	Each Cart's Momentum After the Collision $p = (\text{mass})(v_{\text{FINAL}})$ Calculate this value	Add p's of orange & blue before the collision	Add p's of orange & blue after the collision
Orange	1						
Blue	2.0						

(1) What relationship do you observe between  $p_O$  and  $p_B$  (In the last two columns?)

\_\_\_\_\_

(2) Calculate the kinetic energy of each cart before the collision and add them up. Answer: \_\_\_\_\_

(3) Calculate the kinetic energy of each cart after the collision and add them up. Answer: \_\_\_\_\_

(4) The program says it is perfectly elastic. But is it? \_\_\_\_\_ How do you know?