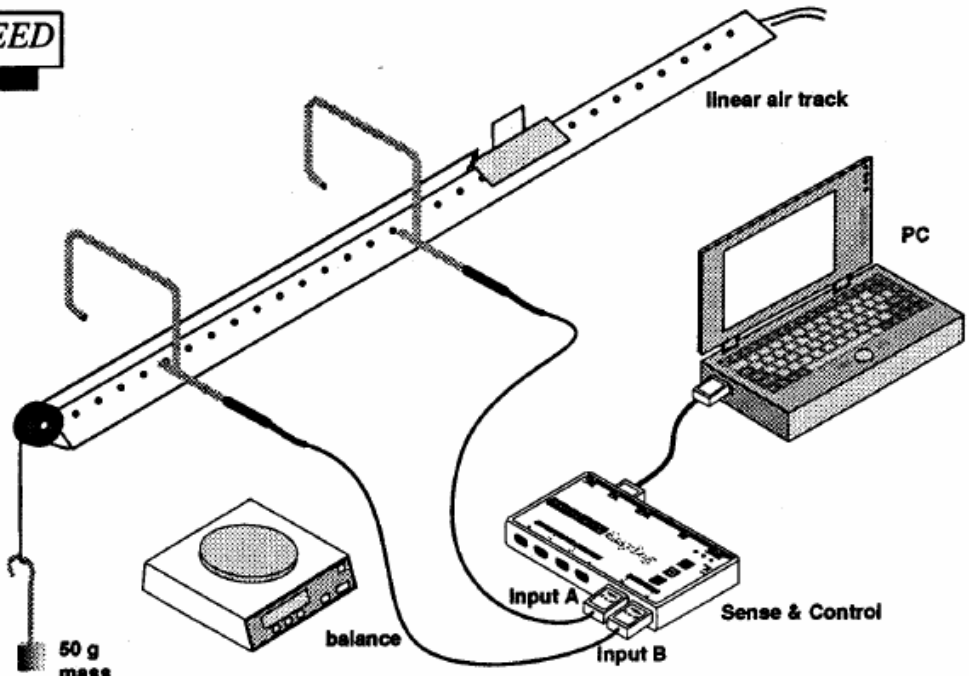
Name _____

Impulse and Change in Momentum.

READ

The velocity, and hence the momentum, of a moving object is changed by the action of an unbalanced force. In this experiment you will investigate how the size of that force and the time for which it acts changes the momentum of an object moving in a straight line.

WHAT YOU NEED



Procedure:

- Set-up the experiment according to the prelab instructions
- Release the cart and allow it to pass through both gates completely before the mass strikes the floor
- Record your results for each of the trials in the table below. Show your calculations in the provided spaces

Mass	Force (N)	Time (A→B)	Momentum Gate 1	Momentum Gate 2
Cart with 50g mass = **0.5435 Kg**				
Cart + Mass Bar with 50g mass = **1.0435 Kg**				
Cart with 100g mass =**0.5935 Kg**				
Cart + Mass Bar with 100g mass = **1.0935 Kg**				

1. Calculate the force producing the acceleration

Exp 1:

Exp 2:

Exp: 3

Exp 4

2. Momentum at A

Use the momentum formula p = mv

M = mass of the cart
V = speed through gate A

Find velocity by dividing the length of the index card (in meters) by the interval time for gate A. Show your work below.

Exp 1:

Exp 2:

Exp: 3

Exp 4

3. Momentum at B

Use the momentum formula p = mv

M = mass of the cart
V = speed through gate A

Find velocity by dividing the length of the index card (in meters) by the interval time for gate B. Show your work below.

Exp 1:

Exp 2:

Exp: 3

Exp 4

4. Impulse Calculation (Use J = Ft)

Exp 1: Exp 2:

Exp: 3 Exp 4

5. Change in Momentum Calculation (use p final – p initial)

Exp 1: Exp 2:

Exp: 3 Exp 4

1: Now calculate, for each of your sets of readings, the 'effect' that the force had on the system using;

Impulse = Force x time

Enter these values in the following table.

	Impulse (Ns)	Change in Momentum ($kgms^{-1}$)
Expt. 1		
Expt. 2		
Expt. 3		
Expt. 4		
Expt. 5		
Expt. 6		

Impulse and Momentum Pasco Lab Data Sheet

Experiment	Gate A (elapsed time)	Gate B (elapsed time)	Time (A→B)

Length of index card _____ m

Velocity Calculations for experiments

Gate A

Gate B

Experiment #1

Experiment #2

Experiment #3

Experiment #4