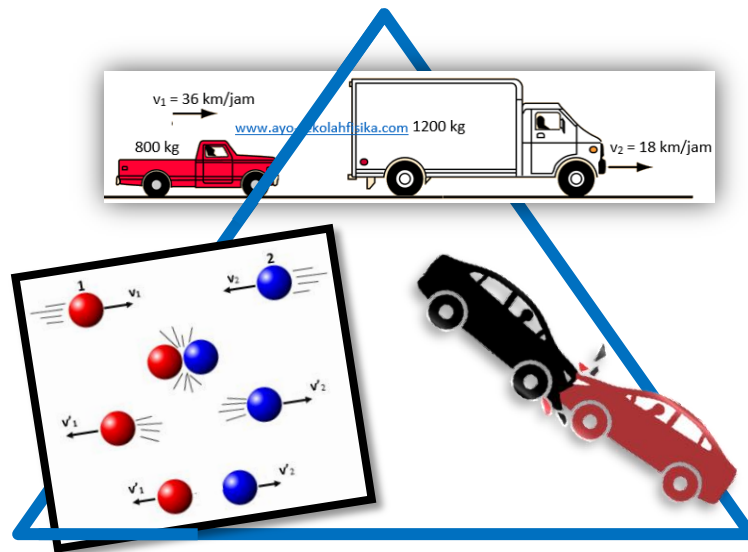


WORKSHEET

"COLLISION"



Name : 1.
2.
3.
4.
5.
6.

Class :

Group :

FAR EASTERN UNIVERSITY HIGH SCHOOL
Nicanor Reyes St, Sampaloc, Manila, 1015 Metro Manila
ACADEMIC YEAR 2018-2019



A. Indicators

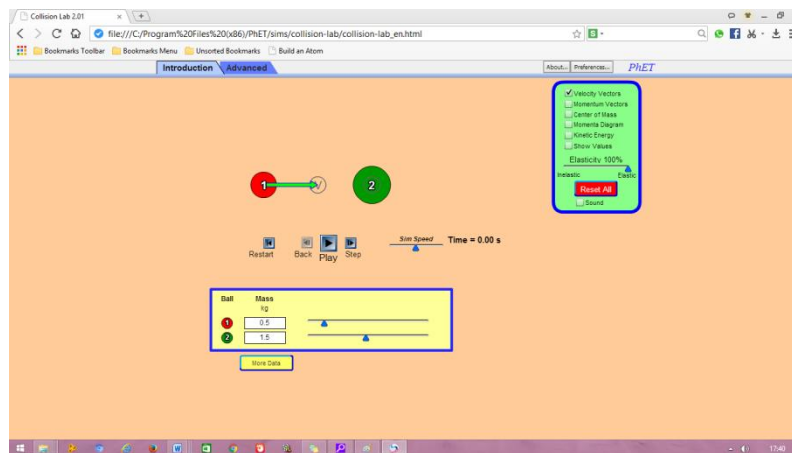
1. Explain collision and the differences between two major types of collisions.
2. Solve problems about collision using conservation of momentum and impulse-momentum theorem.

B. Objectives

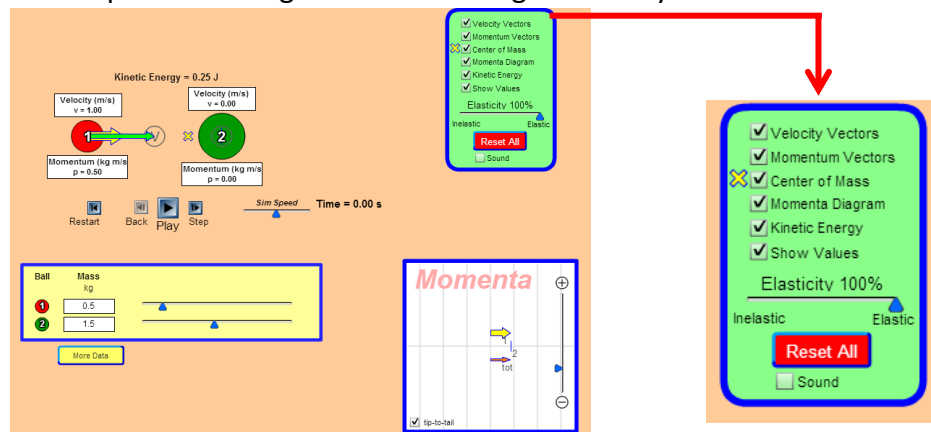
1. define collision; and
2. differentiate the two major types of collision.

C. Directions

1. After opening the 'Collision' simulation file, the display will appear as follows :



2. Check all the options of the green bar in the right side of your monitor.



3. Click '**More Data**' to show another data that you need.

The screenshot shows a simulation of two balls colliding. Ball 1 has a mass of 1.00 kg and an initial velocity of 2.00 m/s. Ball 2 has a mass of 2.00 kg and an initial velocity of -0.50 m/s. The simulation is set to 'Elastic' with 100% elasticity. A red arrow points from the 'More Data' button to a data table.

Ball	Mass kg	Position m	Velocity m/s	Momentum kg m/s
1	1.00	0.79	2.00	2.00
2	2.00	2.61	-0.50	-1.00

4. To change the data of **Mass** and **Velocity**, you can change it here :

The screenshot shows the 'More Data' button and a data table. The table has columns for Ball, Mass (kg), Position (m), Velocity (m/s), and Momentum (kg m/s). The data for Ball 1 is Mass: 1.00, Position: 0.79, Velocity: 2.00, Momentum: 2.00. The data for Ball 2 is Mass: 2.00, Position: 2.61, Velocity: -0.50, Momentum: -1.00.

Ball	Mass kg	Position m	Velocity m/s	Momentum kg m/s
1	1.00	0.79	2.00	2.00
2	2.00	2.61	-0.50	-1.00

D. Observation Results

Activity 1. Inelastic Collision

No.	Balls		Before Collision		After Collision		Amount of Momentum (kg m/s)		Kinetic Energy (J)	
	m _{1b} (kg)	m _{2b} (kg)	v _{1b} (m/s)	v _{2b} (m/s)	v _{1a} (m/s)	v _{2a} (m/s)	p _{before} (p ₁ + p ₂)	p _{after} (p ₁ + p ₂)	KE _{bef}	KE _{aft}
1.	1.00	3.00	2.00	1.00						
2.	1.50	2.00	3.00	-0.50						

Activity 2. Elastic Collision

No.	Balls		Before Collision		After Collision		Amount of Momentum (kg m/s)		Kinetic Energy (J)	
	m _{1b} (kg)	m _{2b} (kg)	v _{1b} (m/s)	v _{2b} (m/s)	v _{1a} (m/s)	v _{2a} (m/s)	p _{before} (p ₁ + p ₂)	p _{after} (p ₁ + p ₂)	KE _{bef}	KE _{aft}
1.	1.00	3.00	2.00	1.00						
2.	1.50	2.00	3.00	-0.50						

E. Questions

1. Based on the data you get, how are the amounts of momentum before and after collision? Give your explanation.

a. Elastic collision :

b. Inelastic collision :

2. Based on the data you get, how are the amounts of kinetic energy before and after collision? Give your explanation.

a. Elastic collision :

b. Inelastic collision :

3. Give your conclusion you get from the simulations you have done!