Momentum Simulations

Physicsclassroom.com/Physics-Interactives/Momentum-and-Collisions

Momentum is a property of the motion of an object. We calculate momentum by multiplying the mass of the object by its velocity (direction does matter).

$$p = mv$$

Each simulation is intended to demonstrate a different type of interaction. For each of the following simulations, collect enough data (at least 3 arrangements) that will allow you to justify conclusions about the the following:

1. What happens to the momentum of object A during the interaction?
2. What happens to the momentum of object B during the interaction?
3. What happens to the total momentum of the system during the interaction?

Simulation 1: Fish Catch

Define Object A:

Define Object B:

	Before Interaction			After Interaction		
	Mass (g)	Velocity (cm/s)	Momentum (g cm/s)	Mass (g)	Velocity (cm/s)	Momentum (g cm/s)
Object A						
Object B						
Total						

	Before Interaction			After Interaction		
	Mass (g)	Velocity (cm/s)	Momentum (g cm/s)	Mass (g)	Velocity (cm/s)	Momentum (g cm/s)
Object A						
Object B						
Total						

	Before Interaction			After Interaction		
	Mass (g)	Velocity (cm/s)	Momentum (g cm/s)	Mass (g)	Velocity (cm/s)	Momentum (g cm/s)
Object A						
Object B						
Total						

Conclusion statements:

1.

2.

3.

Simulation 2: Exploding Carts

Define Object A:

Define Object B:

	Before Interaction			After Interaction		
	Mass (kg)	Velocity (cm/s)	Momentum (kg cm/s)	Mass (kg)	Velocity (cm/s)	Momentum (kg cm/s)
Object A						
Object B						
Total						

	Before Interaction			After Interaction		
	Mass (kg)	Velocity (cm/s)	Momentum (kg cm/s)	Mass (kg)	Velocity (cm/s)	Momentum (kg cm/s)
Object A						
Object B						
Total						

	Before Interaction			After Interaction		
	Mass (kg)	Velocity (cm/s)	Momentum (kg cm/s)	Mass (kg)	Velocity (cm/s)	Momentum (kg cm/s)
Object A						
Object B						
Total						

Conclusion statements:
1.

2.

3.

Simulation 3: Collision Carts (Elastic Collisions)
Define Object A:

Define Object B:

	Before Interaction			After Interaction		
	Mass (kg)	Velocity (m/s)	Momentum (kg m/s)	Mass (kg)	Velocity (m/s)	Momentum (kg m/s)
Object A						
Object B						
Total						

	Before Interaction			After Interaction		
	Mass (kg)	Velocity (m/s)	Momentum (kg m/s)	Mass (kg)	Velocity (m/s)	Momentum (kg m/s)
Object A						
Object B						
Total						

	Before Interaction			After Interaction		
	Mass (kg)	Velocity (m/s)	Momentum (kg m/s)	Mass (kg)	Velocity (m/s)	Momentum (kg m/s)
Object A						
Object B						
Total						

Conclusion statements:

1.

2.

3.

Write ***one*** sentence that clearly summarizes what you learned about momentum during this activity.