


Conservation of Momentum: Collisions	
Learning Target	Description
9.2	I can define, interpret, and solve problems involving the Law of Conservation of Momentum.
9.3	I can define, analyze, and solve problems involving two particle collision.



### Review Momentum and Impulse

Momentum

$$p = m v$$

Impulse-Momentum Theorem

$$F \Delta t = \Delta p = p_f - p_i$$


### Conservation of Momentum

If the net external force acting on an object, or system, is zero, its momentum is conserved.

$$p_i = p_f$$

### Two-Partical Collisions

A **collision** is a situation in which two objects strike one another and in which the net external force is either zero or negligibly small.

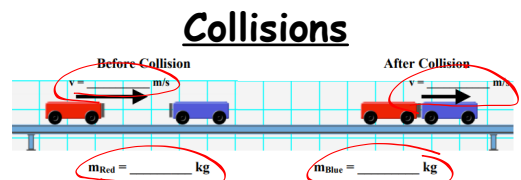
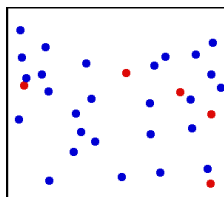


### 2 Types of Collisions

*Sticky*  
**Inelastic collisions** are when objects stick together on impact.

m

*Bouncy*  
**Elastic collisions** are when objects bounce, and do not stick together on impact.



Use mass and velocity values to complete the following momentum table.

	Before Collision $P_i$	After Collision $P_f$	$P_f - P_i$
Red Cart	_____ kg x _____ m/s = _____ kg•m/s	_____ kg x _____ m/s = _____ kg•m/s	
Blue Cart	_____ kg x _____ m/s = _____ kg•m/s	_____ kg x _____ m/s = _____ kg•m/s	
System Total			

# HOMEWORK

## Collisions Interactive

- [Physicsclassroom.com](https://www.physicsclassroom.com)
- Interactives
- Momentum and Collisions
- Collision Carts