



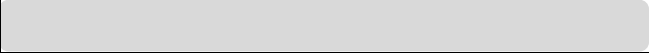





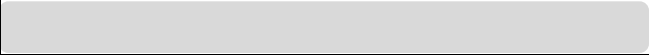


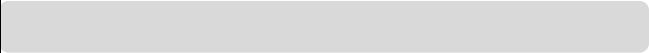









# Collision Lab











Physics 432

Name \_\_\_\_\_

1 2 3 4 5 6 7 8

In this lab, you will be observing and recording results of two cars crashing together. Using the provided Cars, Track, and Masses, perform the following collisions noted in the chart below.








Collision	Before Collision		Added Masses	After Collision Picture
	Red Car	Blue car		
1 Elastic: Magnet Side	Slow 	Stopped 	None	
2 Elastic: Magnet Side	Medium 	Stopped 	Add 500g to Blue	
3 Elastic: Magnet Side	Medium 	Stopped 	Add 500g to Red	
4 Elastic: Magnet Side	Slow 	Slow 	none	
5 Elastic: Magnet Side	Medium 	Medium 	Add 250g to Red	
6 Inelastic: Velcro Side	Fast 	Medium 	Add 250g to Blue	
7 Inelastic: Velcro Side	Stopped 	Fast 	Add 500g to Red	

Collision	Before Collision		Added Masses	After Collision Picture
	Red Car	Blue Car		
8 Inelastic: Velcro Side	Slow 	Slow 	Add 500g to Blue	
9 Inelastic: Velcro Side	Medium 	Medium 	Add 250g to Red Add 250g to Blue	
10 Explosion: Press button	Stopped 	Stopped	Add 250g to Red Add 250g to Blue	
11 Explosion: Press Button	Stopped 	Stopped	Add 250g to Red	
12 Explosion: Press Button	Stopped 	Stopped	Add 500g to Red	

### Analysis Questions

- 1- Based on your observations, how did changing the mass affect your car after a collision?
  
- 2- What was similar between all of your ELASTIC collisions?
  
- 3- What was similar between all of your INELASTIC collisions?
  
- 4- In collision 9 there was a collision that resulted in two stopped cars. How was this possible?

For the second part of the lab, you are given the end result of a collision, and you will be predicting the initial state of the system.

Collision	Before Collision		Added Masses	After Collision Picture
	Red Car	Blue car		
1				<p>Zero                      Medium &gt;&gt;</p> 
2				<p>&lt;&lt; Medium                      Fast &gt;&gt;&gt;</p> 
3				<p>   Medium &gt;&gt;</p> 
4				<p>   Zero</p> 
5				<p>Slow &gt;                      Medium &gt;&gt;</p> 
6				<p>&lt;&lt; Fast                      Slow &gt;</p> 
7				<p>Fast &gt;&gt;                      Slow &gt;</p> 

## Analysis Questions

- 1- In each of the above pictures in the “after collision” column, circle the car with the most momentum
  
- 2- Go back to collision 2. What is another way to cause this same collision?
  
- 3- Find another collision that has another cause. List the collision and cause below.
  
- 4- Which collision was impossible to make? Why was it impossible?
  
- 5- In the real world, police are called to accident scenes to determine the cause of an accident. How is this similar to what a police officer might do?
  
- 6- How could momentum and collisions be used in sports?