

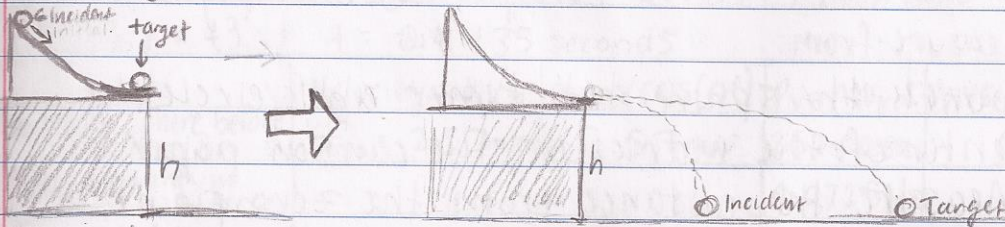
# Collisions in Two Dimensions

## Introduction:

In this lab we are trying to prove momentum is conserved in a collision between two spheres.

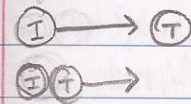
One sphere will be the incident ball, the one with an initial velocity and travels down a ramp, and the other is the target ball, which is initially stationary and rests at the bottom of the ramp. If momentum is conserved, the mass of each sphere times its respective final velocity should equal the incident ball's mass times its initial velocity, or  $p_i = p_{f1} + p_{f2}$ .

## Picture:

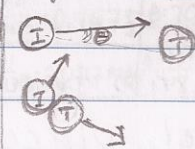


## Top down:

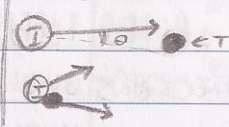
Equal Mass,  $\theta = 0$



Equal Mass,  $\theta > 0$



Different Mass,  $\theta > 0$



## Procedure:

• Gather Materials:

- two dimensional collision apparatus (ramp)
- carbon paper
- meter sticks
- metal spheres
- electrical tape
- paper
- protractor
- modeling clay
- straws
- marble (lighter than metal spheres)
- materials for leveling
- string