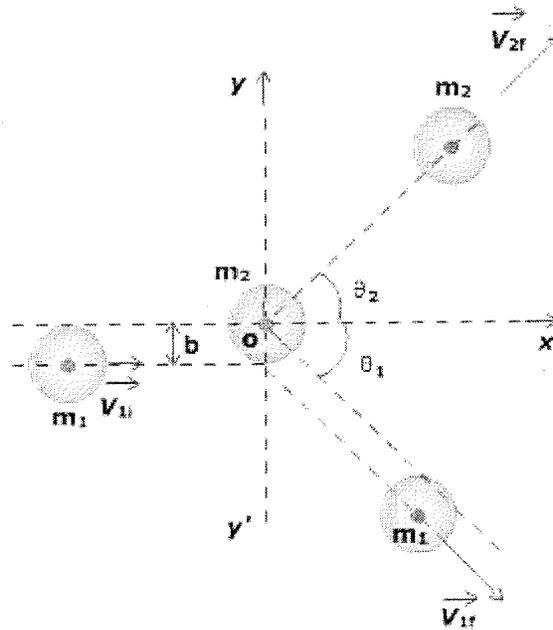


Physics 12

Collisions in Two Dimensions

1. In physics 11 the collisions of objects were in one dimension.
2. The same conservation of momentum technique is used for two dimensional analysis. The only challenge is to keep track of all the variables.

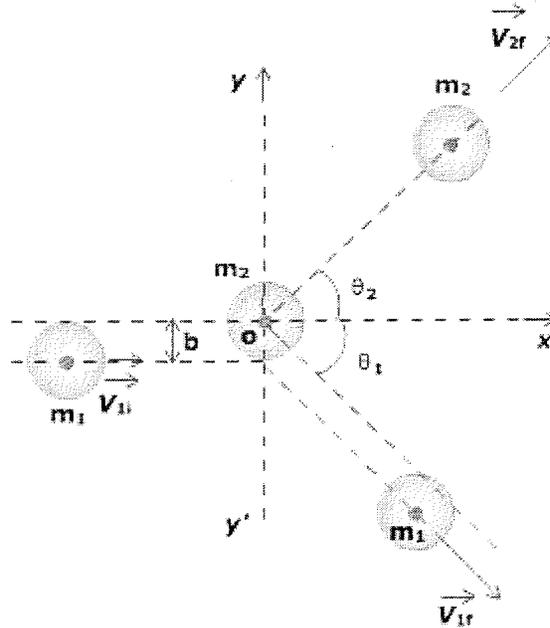


3. Use a table to keep track of the momentum of the each object before and after the collision in each dimension.

	X Momentum before	X Momentum after	Y momentum before	Y momentum after
Object 1	$m_1 v_1$	$m_1 v_1'$		
Object 2	$m_2 v_2$	$m_2 v_2'$		
Total				

4. The above chart generates 4 equations that will allow you to solve for 4 variables.

Example: A billiard ball moving at 3.0 m/s in the x direction hits an equal mass ball initially at rest. The two balls move off at 45°, one above the x axis and one below. What are the speeds of the two balls?



	X Momentum before	X Momentum after	Y momentum before	Y momentum after
Object 1	$m_1 v_1$			
Object 2	$m_2 v_2$			
Total				