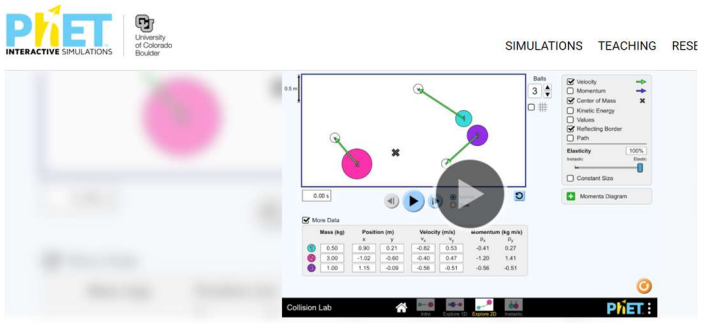
304 PHet Simulation Collision Lab (Inelastic and Elastic)

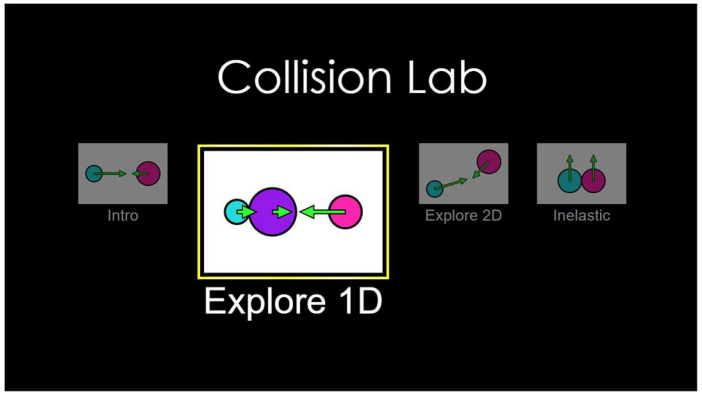
Objective: I can describe that momentum depends on the mass and velocity of the objects and that momentum is conserved in elastic collisions.

Website: https://phet.colorado.edu/en/simulations/collision-lab

Go to "Explore 1D"



Collision Lab



Watch the VIDEOS on how to perform the lab and solve the math.

Inelastic Collisions: http://drduick.com/videos/53.html

Elastic Collisions: http://drduick.com/videos/43.html

Complete the two tables on the next page and answer Questions on 304

Inelastic collisions

MATH	Before						After		
	Mass 1	Velocity 1	P 1	Mass 2	Velocity 2	P 2	Total Mass	Total Velocity	Total P
1	0.50kg	1.00m/s		1.5kg	0.0m/s		2.0kg		
2	1.0kg	1.00m/s		1.0kg	-1.00m/s		2.0kg		
3	1.0kg	3.00m/s		0.5kg	-5.00m/s		1.50kg		
4	0.75kg	1.00m/s		0.25kg	3.00m/s		1.00kg		

$$P_i = P_f$$

$$m_1 v_1 + m_2 v_2 = (m_1 + m_2)V$$

Elastic collisions

Math	Before						After					
	Mass 1	Velocity 1	P 1	Mass 2	Velocity 2	P 2	Mass1	Velocity 1	P1	Mass 2	Velocity 2	P2
1	0.50kg	1.00m/s		1.5kg	0.0m/s							
2	2.0kg	0.50m/s		0.50kg	-2.00m/s							
3	1.0kg	3.00m/s		0.50kg	-5.00m/s							
4	0.75kg	4.00m/s		0.25kg	-12.00m/s							

M1V1i + M2V2i = M1V1f + M2V2f

V1i + V1f = V2i + V2f

V1f = V2i + V2f – V1i