Physics Chapter 6 Virtual Lab

***Directions: In the space provided solve the following scenarios using the equations from this chapter and then use the lab simulation to check your answers.***

***Check the following values each time you reset your experiment:***

* ***Velocity vectors***
* ***Momentum vectors***
* ***Kinetic Energy***
* ***Show Paths***
* ***Show Values*** 
  + ***Note: Uncheck values to arrange the balls for the right directions***

Scenario 1 – 100% Elastic - “Elastic Collision”

A red ball with a mass of 0.5kg is traveling east at a speed of 1.14 m/s. It strikes a green ball with a mass of 1.5kg that is initially at rest. After 1.25s the red ball has a momentum of 0.28 kg x m/s W. What is the momentum of the green ball after 1.25s? What is the distance that the green ball travels after the collision in the given amount of time?

Scenario 2 – 100% Elastic - “Elastic Collision”

*HINT: Do not change the positions of the balls for this scenario they are already positioned correctly.*

A ball with a mass of 2.4kg has an initial velocity of 1.04 m/s and an initial momentum of 2.51 kg x m/s NE. It strikes another ball that has a mass of 1.5kg and an initial velocity of 0.71m/s SW. After the collision the first ball’s velocity is 0.29 m/s and the second ball’s velocity is 1.45 m/s. What is the momentum of the second ball after collision? (Be sure to include both direction & magnitude!)

Scenario 3 – 100% Inelastic “Perfectly Inelastic Collision”

A red ball and a green ball, both weighing 1.3kg travel directly toward each other with equal velocities of 1.0m/s. If the collision is perfectly inelastic, infer what you think will happen in the space below then use the simulation to see if your inference was correct. Why does this occur?

Scenario 4- 100% Inelastic - “Perfectly Inelastic Collision”

A red ball has an initial momentum of 2.05 kg x m/s E. It strikes a 0.8kg green ball that has an initial velocity of 1.30m/s W. In a perfectly inelastic collision the two balls stick together and move toward the east. The green ball has a final velocity of 0.36 m/s. The red ball has a final momentum of 0.73 kg x m/s E. What is the mass of the red ball?

Scenario 5: (50/50 Elastic/Inelastic) - “Inelastic Collision”

A 1.5kg green ball is traveling south with a velocity of 0.75m/s. Its strikes a 0.5kg red ball that is initially at rest. After the collision, the red ball has a velocity of 0.73 m/s. What is the velocity of the green ball after the collision?