

Name: _____ Date: _____

m_r^β **Physics Practice: Momentum simulations**

We can simulate collisions using the computer. Please read the material on <http://www.mrbenson.org/momentum-and-collisions-in-one-dimension/> before you begin.

1. Using elastic simulation, a 10kg blue cube moving 10m/s and a 10kg red cube moving -10m/s, find the momentum of each cube and the total momentum, before and after the collision.

2. Repeat the previous simulation using inelastic collisions. Verify the velocity of the combined masses using the momentum equation, $\vec{p} = m\vec{v}$.

3. Using elastic simulation, a 10kg blue cube moving 10m/s and a 5kg red cube moving -10m/s, find the momentum of each cube and the total momentum, before and after the collision. Which cube was moving faster after the collision?

4. Repeat the previous simulation using inelastic collisions. Verify the velocity of the combined masses using the momentum equation.

5. Using elastic simulation, a 5kg blue cube moving 10m/s and a stationary 10kg red cube, find the momentum of each cube and the total momentum, before and after the collision. Which cube was moving faster after the collision?

6. Repeat the previous simulation using inelastic collisions. Verify the velocity of the combined masses using the momentum equation.

7. Create your own simulation parameters, and run it with both elastic and inelastic collisions. Describe it fully below, showing calculations for all momentum quantities.