Unit 5 Momentum Assessment

Equations Linked Here

 Two physics students are having fun with Play-Doh. The red Play Doh has a mass of 0.3 kg and the purple Play-Doh has a mass of 0.4 kg. The red Play Doh is thrown at 3 m/s at the purple Play-Doh, which is at rest. The two stick together and move. What is the final velocity of the Play-Dohs when they stick together? Draw a before and after pictures and show all equations and work.

m1v1i + m2v2i = (m1 + m2)vf(0.3)(3) + (0.4)(0) = (0.3 + 0.4)vf 0.9 = (0.7)vf Vf = 1.3 m/s

2. Two physics students are having fun with Play-Doh. The red Play Doh has a mass of 0.3 kg and the purple Play-Doh has a mass of 0.4 kg. The red Play Doh is thrown at 3 m/s at the purple Play-Doh, which is thrown towards the red Play Doh at -4 m/s. The Red Play Doh keeps moving in the same direction at 0.5 m/s. What is the final velocity of the purple Play Doh? Draw a before and after pictures and show all equations and work.

m1v1i + m2v2i = m1v1f + m2v2f(0.3)(3) + (0.4)(-4) = (0.3)(0.5) + (0.4)v2f 0.9 + (-1.6) = 1.5 + (0.4)v2f -0.7 = 0.15 + (0.4)v2f -0.85 = (0.4)v2f -2.2 m/s = v2f

3. Two physics students are having fun with Play-Doh. The red Play Doh has a mass of 0.3 kg and the purple Play-Doh has a mass of 0.4 kg. The students want to have some more fun and put a small amount of explosives in between the two Play-Dohs (safely and outside of course). The purple Play-Doh explodes to the right with a velocity of 10 m/s. What is the final velocity of the red Play-Doh? Draw a before and after pictures and show all equations and work.

-m1v1f = m2v2f -(0.3)v1f = (0.4)(10) -0.3v1f = 4 V1f = -13.3 m/s

- 4. Choose <u>1 of the 3</u> gifs below.
 - a. Draw a before and after picture of the gif (modeling)
 - b. Describe the type of collision and why
 - c. Describe how the impulse equation relates to the situation and why







5.4 Impulse and Momentum: I can conceptually and mathematically determine the impulse and momentum of a collision.

5.5 Inelastic Collisions: I can conceptually and mathematically predict the outcome of an inelastic collision.

5.6 Elastic Collisions: I can conceptually and mathematically predict the outcome of an elastic collision. This includes explosion problems.