

Lab 06-3 Conservation of Momentum

Objective: Attempt to verify the conservation of momentum during a different types of collisions

Procedure:

1. Setup the air track with a motion sensor on each end
2. Attach a needle to one glider and the wax end to the other.
3. Prepare the other end of each glider with and elastic end.
4. Open up the file Lab 06-2 Conservation of Momentum.cap in the Capstone Folder in the pub drive.
5. Connect each motion sensor to the computer through the interfaces
6. Make sure that there are 2 graphs in the program. 1 displacement graph for each of the 2 motion sensors.
7. Turn the air on to full.
8. Using the need and wax end towards each other place the gliders about 40cm apart on the air track.
9. Click record.
10. Using the side peg of the glider, push 1 glider down the track towards the other one that is sitting at rest.
11. Once the gliders have collided stop recording.
12. Using the slope tool determine the velocity before and after the collision for each glider.
13. Measure the mass of the glider with the balance.
14. Calculate the sum of the initial momentum. (Theoretical)
15. Calculate the sum of the final momentum. (Experimental)
16. Complete all calculations and questions.
17. Repeat steps 8 through 16 with an additional 100 grams on the glider.
18. Repeat steps 8 through 16 with the elastic ends 3 different times.
 - a. Once with the same mass on each glider
 - b. Once with more mass on the moving glider
 - c. Once with more mass on the still glider.

Postlab Questions

1. Explain the difference between a perfect inelastic collision and an regular inelastic collision.
2. Explain how the different masses effect the collisions in the nearly elastic collisions.
3. Where did the kinetic energy go in each of these trials?
4. Explain why an elastic collision can not be created with these air tracks.