

Safety Precautions

The materials in this kit are considered nonhazardous. Please follow all normal laboratory safety guidelines. Horseplay or gressive pushing of the pucks is not permitted.

Procedure

Setup

1. Inflate one balloon and twist (but do not tie) the neck shut to prevent air from escaping.
2. Without allowing the neck to untwist, carefully stretch the mouth of the balloon over the rubber stopper on the air puck assembly. *Note:* The balloon will tear if overstretched.
3. To levitate the puck, untwist the neck of the balloon.
4. Gently push the puck to accelerate it over any smooth surface.
5. Repeat steps 1–4, as often as necessary.
6. To change the mass of the puck, add washers or pennies to the puck surface, and then repeat steps 1–4.

Collisions

7. Gently push two pucks toward each other.
8. Record observations of the collision on the worksheet in terms of the type of collision that occurred.

Newton's First Law of Motion

9. Gently push a puck and notice if the direction and speed (velocity) appears to remain constant or changes before the balloon fully deflates.
10. Record observations on the worksheet stated in terms of Newton's First Law of Motion.
11. Gently push one puck toward a levitating stationary puck.
12. Record observations of the collision on the worksheet. Describe the observations in terms of Newton's first law of motion.

Newton's Second Law of Motion

13. Gently push one puck toward a levitating stationary puck.
14. Record observations of the collision on the worksheet. Describe the observations in terms of Newton's second law of motion.
15. Add mass to a levitating stationary puck and gently push another puck toward the more massive puck. *Note:* Repeat with three different amounts of mass.
16. Record observations of the collision on the worksheet. Describe the observations in terms of Newton's second law of motion.

Newton's Third Law of Motion

17. Set up a puck and allow it to remain stationary.
18. Record observations of the puck on the worksheet. Describe the observations in terms of Newton's third law of motion.

Disposal

Consult your instructor for appropriate disposal procedures.

Name: _____

Air Puck Worksheet

Collisions	Observations
Two pucks colliding	
Newton's First Law of Motion	
Velocity of one puck	
One puck colliding with a stationary puck	
Newton's Second Law of Motion	
One puck colliding with a stationary puck	
One puck colliding with a stationary puck—Mass 1	
One puck colliding with a stationary puck—Mass 2	
One puck colliding with a stationary puck—Mass 3	
Newton's Third Law of Motion	
Levitating stationary puck	

1. What type of collision occurs with air pucks? What evidence leads you to this conclusion?

2. Suggest other experimental setups to test Newton's laws of motion.