

Newton's Third Law: Balloon & Rolling Chair Experiments

Name: _____ Date: _____

LEARNING OBJECTIVE

Students will demonstrate and explain Newton's Third Law, that for every action there is an equal and opposite reaction.

MATERIALS NEEDED

- balloon
- a rolling office chair, scooter, or skateboard (adult supervised)
- a ball
- a wall

HANDS-ON ACTIVITY

1. Blow up a balloon, hold the opening pinched, and release it freely without a string; observe and record the direction it flies compared to the direction air escapes.
2. Sit in a rolling chair (or stand on a scooter/skateboard, with supervision) and firmly throw a ball forward; observe and record what happens to your own motion.
3. Push off a wall firmly while sitting in the rolling chair, and record which direction you move relative to your push direction.
4. For each of the 3 trials, record the Action (the force you applied and its direction) and the Reaction (what happened and its direction) in a table.
5. Write a one-sentence Newton's Third Law statement for each of your 3 trials, using the words 'action' and 'reaction.'

QUESTIONS

1. **State Newton's Third Law in your own words.**

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2. **In the free-flying balloon experiment, what was the action and what was the reaction?**

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3. **When you pushed off the wall in the rolling chair, why did you move backward?**
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4. Why don't action-reaction force pairs cancel each other out, since they are equal and opposite?
