

Thruster Balloons

Instructor Guide

1 Objective

This activity is meant to reinforce concepts in Newton's Laws of Motion, especially the third law.

2 Materials

- Balloons, equal in size and to number of students
- String
- Straws, half as many as there are students
- Tape

3 Activity

Blow up a balloon and hold onto the end. Ask students what they think will happen when you let go. After discussing for a minute, let it go and watch it fly around. After it has exhausted all its air, retrieve the balloon. Explain how Newton's Third Law of Motion dictates how the balloon moves. The balloon is exerting a force on the air to push it out of the end. The air then pushes back on the balloon, moving it in the opposite direction the end is pointing.

Then ask each student to come up and get a balloon. Have them get into pairs and give each pair a straw and a long piece of string (5-10ft, depending on size of the room). Let each student in the pairing have a turn blowing up the balloon, taping it to the straw, and watching it move down the string as the partners hold both ends. Once it seems like everyone has had an opportunity to blow up a balloon and let it go, ask them to clean up and return to their seats. Then attempt to have them explain to you exactly what happened to the balloons, and how it relates to Newton's Third Law of Motion, with no guiding from yourself.

Special thanks to science-class.net for help refining the idea of Thruster Balloons.