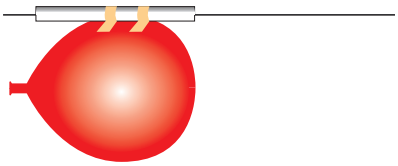
All Aboard the ISS!

In an exciting episode from ***Snoopy in Space*** on AppleTV+, Snoopy and Woodstock need a huge rocket to get them to the International Space Station, or ISS. As you've learned, Newton's Second Law of Motion tells us that it takes a lot of force, or thrust, to move such a big rocket. To learn more, you can experiment with balloon-powered straw rockets in your classroom.

Test 1: Using the materials your teacher gives you, follow these directions.



1. Tie one end of the string to a chair or other support structure.
2. Thread the other end of the string through one of the straws.
3. Pull the string tight and tie it to another support structure as directed by your teacher.
4. Blow up the **round** balloon, but do not tie off the end. How many breaths did it take? ___
5. Have one person pinch the end of the balloon closed and hold it, while another team member tapes the balloon to the straw on the string. The balloon should hang below the straw with the end parallel to the string.
6. Position the straw at one end of the string and let go of the end of the balloon to see how far and fast your rocket travels.

What force propelled your straw rocket?

_____

What could you do to make the straw rocket go faster and farther?

_____

_____

Test 2: Try the experiment again, using the **long** balloon with the same number of breaths as Test 1 and one of the half straws. Describe what happens. Was it what you expected? Why or why not?

_____

_____

_____

Your Turn! Now try the experiment once more, changing one variable. For example, fill the balloon with half as many breaths or change the angle of the string. Use this template to record your results on the back of this sheet.

Test 3: Change made: _____

_____

What we think will happen: _____

_____

What happens? _____

_____

Test Results: On the back of this sheet, draw the straw rocket design that was most successful. Then discuss in class how this activity demonstrates Newton's Second Law of Motion.

Did you know? It takes astronauts like Snoopy about 6 hours to reach the International Space Station. What did Snoopy do when he got there? Find out by watching ***Snoopy in Space*** on AppleTV+, on the Apple TV app, or via apple.co/snoopyinspace.

Families: On a clear night, you can see the ISS with your own eyes. Visit spotthestation.nasa.gov to find out when the ISS will pass overhead near you.