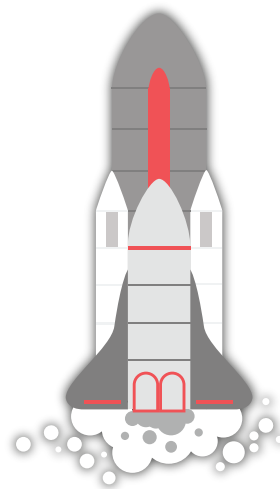


Soda Bottle Shuttle Stomper

Sally Ride was the first American woman in space. In honor of Sally's birthday, try this aerospace challenge and see how high you can get your straw shuttle to soar!

Collect

- Clean plastic soda bottles with caps—*make sure to collect different sizes like 2 liter, 1 liter, 16 ounce and 8 ounce bottles.*
- Plastic straws—*at least one straight and one bendy*
- Paper
- Scissors
- Tape
- Clay or dough



The Challenge

Build and modify a basic straw shuttle, and then choose the best soda bottle stomper to launch it. What does your straw shuttle need to fly the furthest? Which size soda bottle provides the most thrust? Try it and find out!

Design a straw shuttle

1. Wrap a piece of paper around a straight straw and secure it with tape to make a tube. It's important to make sure the tube is tight enough to hold its shape, but still loose enough that you can slide it off the end of the straw.
2. Squeeze one end of the paper tube closed and secure it with another piece of tape.
3. To make your shuttle more aerodynamic, consider adding a nose cone, wings, or fins.

Try different soda bottle stompers

4. Use the scissors to make a hole in the bottle cap large enough for one of your bendy straws to fit through—it should be a snug fit. You can also use a nail and a hammer to make the hole if necessary.
5. Push the straight part of the straw into the hole so about two inches of the straw is inside of the bottle and the rest is outside.
6. Create a seal by pressing a small amount of clay or dough around the hole and straw.

3, 2, 1...Blast Off!

7. Set the bottle stomper on the ground, slide the shuttle body over the end of the straw, and quickly step down on the bottle to launch your shuttle. How far does it go? Try using the bendy part of the straw to change the launch angle. How does changing the angle affect your launch? You can also try launching the same shuttle with a different sized bottle stomper. A larger bottle that holds more air might provide more thrust. Once you've picked your favorite stomper, continue making modifications to your shuttle until you're happy with how high it soars!

