DIY Stomp Rocket

Collect

- Clean plastic soda bottles of 3 different sizes
- Plastic straws—at least one bendy and one straight
- Paper
- Scissors
- Tape
- Clay or playdough

Design the shuttle

1. Wrap a piece of paper around a straight straw and secure it with tape to make a tube shape. It's important to make sure the tube is tight enough to hold its shape, but still loose enough that you can slid 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. Design and add a nose cone, wings, or fins to make your rocket more aerodynamic.

Prepare for blast off

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

Launch it

1. Set the bottle stomper on the ground. Slide the rocket body over the end of the straw and quickly step down on the bottle to launch your rocket.
2. Try launching your rocket using a different size bottle to see what happens.

What's happening?

Stomping on the bottle squishes the air inside. The squished air has to go somewhere, so it pushes out through the straw, propelling the rocket as it escapes. If the compressed air didn't

have a way of escaping, the bottle would burst.

The size of the bottle used in this experiment matters. A larger bottle is able ot hold more air and therefore provide more thrust in launching the rocket.

Take it further

Try using the bendy part of the straw to change the launch angle of the rocket. How does changing the angle affect the rocket's launch?

Lose the bottle and blow into the straw. Where you able to launch the rocket further with your breath or with the bottle?

Make additional modifications to your rocket's shape. What happens if you change the shape of the nose cone, add more fines, or remove all of those extras and just use a simple tube shape?

Can you think of a way to attach landing gear, like a parachute? How could the gear be deployed during flight?