

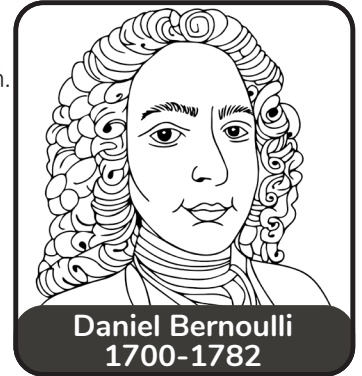
Date: _____

Name: _____

Build an Airfoil

This activity was created by Shannon.

Have you ever wondered how an airplane manages to stay in the air? No, it's not magic! In 1738, a Swiss scientist named Daniel Bernoulli came up with something called Bernoulli's Principle. This principle is what explains what makes airplanes to fly!



What is Bernoulli's Principle?

Bernoulli discovered that fast moving air exerts less pressure than slow-moving air.

What is the shape of a wing called?

It is called an airfoil. They can have slight variations, but the basic design of them is that the top is much more curved than the bottom.

Seeing as an airplane is much heavier than air, how does it stay in the air?

This is where the Bernoulli's Principle comes into action. When the plane is in the air, the wing cuts through the air particles. Some particles are pushed to the bottom of the wing, and others to the top. The ones at the bottom travel a shorter distance, and the ones on top travel a longer distance. The particles going a longer distance move at a higher speed, therefore giving them a lower pressure on top. This difference in pressure between the top and bottom is what generates lift.

How can this be proven?

Great question! To demonstrate this, let's make our own airfoil!

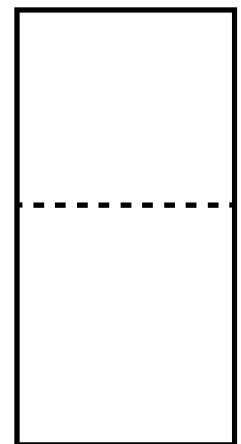
Materials you will need: A piece of paper, a pair of scissors, a pencil, a straw, some tape and some string.

STEP 1

Cut out a strip of paper that is 18cm long and 9cm wide.

STEP 2

Make a fold 8cm in. You'll notice how one side is shorter than the other.



Date: _____

Name: _____

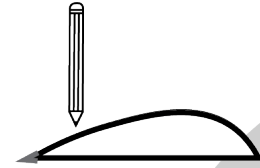
STEP 3

Tape the ends of the short side to the longer side so that the short side lies flat and the longer side arches up.



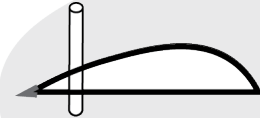
STEP 4

Use a pencil, or something sharp enough to make a hole 2cm into the side you just taped down. Poke straight through both papers.



STEP 5

Take the pencil out and put a straw through the holes and tape it to the top and bottom of the wing using small pieces of tape.



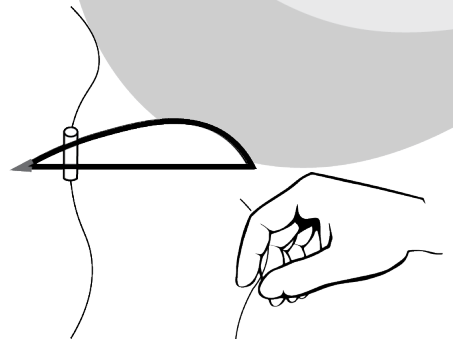
STEP 6

Cut the straw so as little of the straw is above and below the wing as possible.



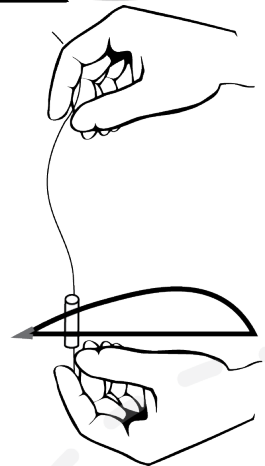
STEP 7

Grab some string, around 50cm, and feed it through the straw.



STEP 8

And now the fun part! Hold the top and bottom of the string tightly. Find an open space and start running! Your goal is to make your airfoil rise up the string!



Are there any changes you can think of that you could make to this airfoil to make it move up the string faster?