

How Strong is Air?

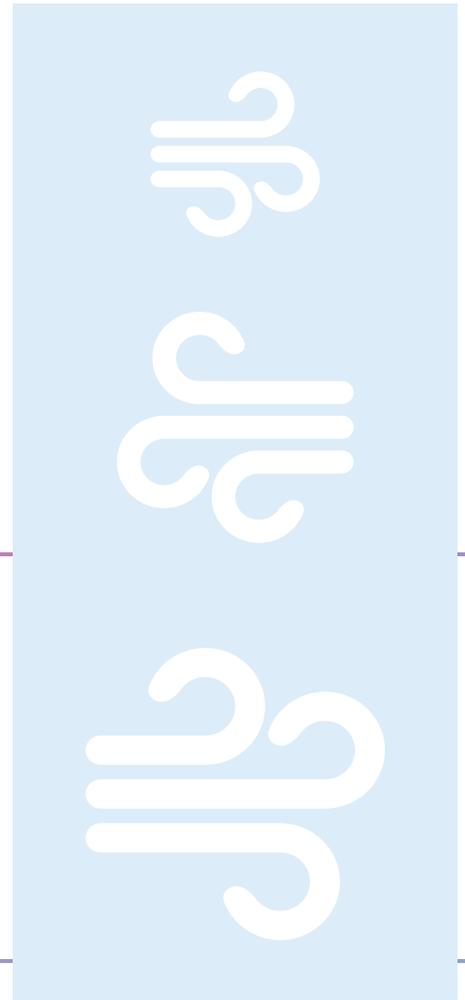
Ages 5 – 8 Experiment with some surprising properties of air.

Prep Time: 5 minutes ▪ **Activity Time:** 5 – 20 minutes

Materials:

- A hardcover book or stiff, flat piece of cardboard
- Other heavy items, such as a brick (make sure it isn't something breakable)
- Plastic produce bags from supermarket
- Straws (average thickness is best, like what you'd get at a restaurant)

- 1** How strong do you think air is? Could it hold up a feather? How about something heavier? Think about moving air and what it can do. How do birds use air when they fly? What kinds of things can a strong wind move? Do you think you could lift a heavy object using only straws, plastic bags, and air?
- 2** Each person can use one straw and one plastic bag.
- 3** If more than one person is trying this, layer the plastic bags on top of each other on a table with the open side of each bag facing out toward the person it belongs to.
- 4** Place the book or cardboard on top of the bag or stack of plastic bags.
- 5** Using just the straw and the mighty power of air in your lungs, try to lift the book by blowing air through the straw and into the plastic bag(s). You will need to wrap the opening of the bag around the straw and hold it closed so that air cannot escape.
- 6** Could you lift the book? Amazing! Is there something heavier you can try to lift now? Try placing heavier objects on top of the book, and see how much you can lift. Make sure you are being careful if you try to lift very heavy objects that could fall toward you.

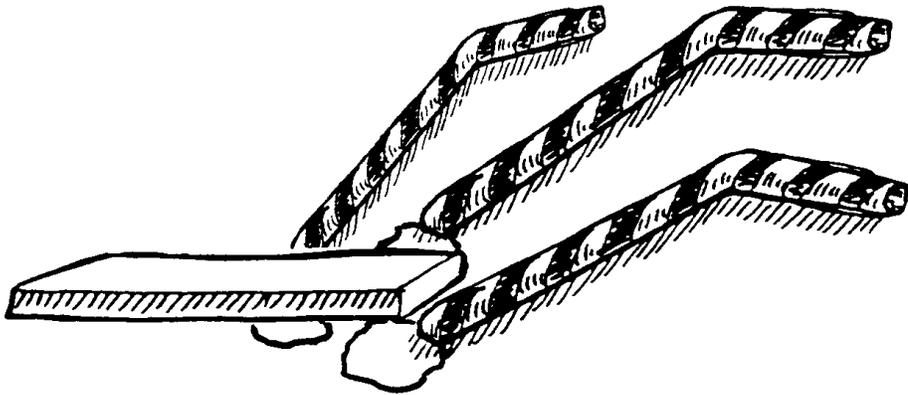


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BACKGROUND FOR PARENTS

We don't notice the air around us most of the time. In this case, air is trapped inside a plastic bag. Children can see that the bag has air in it, and observe that air is quite powerful, by using air to lift objects.

By forcing more and more air into a small space, the air in the bag is compressed. This compressed air has great strength and can support a book, a brick, or even a person! Compressed air is used in garage lifts to raise cars, in tires to support bikes, and in drills to break up concrete.



Additional Questions and Resources:

- What's the fewest number of bags you can use to lift a very heavy object, like a brick?
- Can you lift a brick or other heavy object without using the book?
- For the ultimate challenge, try to lift a small person standing on a strong wooden board (large enough for them to stand on), using only the plastic bags, straws, and air. Make sure to do this on the ground, rather than a table, and have an adult spot the person on the board—the board may get wobbly!

