

## Friction Books

On SCOPE's Friction episode, Julia used old phone books to show how strong friction can be! Here's how you can try the activity at home:



### What you need:

Two old books or out-of-date phone books  
 (Make sure you ask your parents before you use any old books!)  
 A friend

### What to do:

1. Lay the books down side by side, about a book width apart, with the spines facing in.
2. Open the front cover of one book and overlap that with the front cover of the other book.
3. Continue to interleaf the pages of each book. You don't have to alternate every page, but the more pages that interleaf, the stronger the books will be! Make sure the pages of the books overlap at least 10cm. Also, make sure you are in a comfy seat because this step can take a while!
4. Now it is time to try and pull the two phone books apart. Ask your friend to hold one spine, while you hold the other spine.
5. At the same time, start pulling at each spine to try and separate the books.

You will probably find it is impossible!

### What's happening?

When you and your friend tried to pull the books apart, the pages, which are slightly rough, rubbed against each other and caused a lot of friction.

When the force of friction covers a big area, it becomes really strong. So the more pages you overlapped, the more friction you created and the harder you made it to pull the books apart!

Think about it like this; a phone book has about 1500 pages that are about 20cm x 25cm. So, if you overlapped every page, what you were doing was dragging 750,000 square centimetres of paper, over 750,000 square centimetres of paper. That's A LOT of friction!