Phonebook Force
Investigation #9

Description
Surprise your friend and demonstrate the power of friction!

Materials
- Four phonebooks or soft-cover books of similar size
- A friend

Procedure 1, ahead of time
1) Prepare two of the phonebooks so that they are woven together every other page.
2) Practice Procedure 2 a few times before you do it with your friend.

Procedure 2, with a friend
1) Quickly shuffle the other two phonebooks, not trying to be very precise.
2) Demonstrate how easily these books can be pulled apart.
3) Shuffle the two books together again.
4) Have your friend hold the spines of the phonebooks and pull the books apart.
5) Can your friend do it?
6) Now show your friend the phonebooks you prepared ahead of time.
7) Ask him or her to pull the prepared ones apart.
8) Can your friend do it?
Explanation
Each page that comes in contact with another page creates additional \textbf{frictional resistance}. So having many interwoven pages accumulates to a significant \textbf{force}!

\textbf{Keep experimenting:} Cluster or interweave different numbers of pages together to see if the phonebooks can be taken apart or not.

\textbf{Here’s a fun question.} How is the tummy of a snake like the sole of your shoe? They both have tread for traction. You’ve noticed the interesting patterns on the bottom of your shoe. Well, the underside of a snake is similar. Snakes have scales that go across their bodies. These tread-like scales look different from the rest of their scales. The special scales help to grip and push off the ground as the snakes slither along. That’s s-s-s-s-s-sweet!

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