

Skin Science!

Ask an average fourth grader about a human being's largest organ, and you'll probably hear about the heart or brain. Wrong! Our largest single organ is actually our skin, which protects everything else in our body, and on which we depend for information about the world around us. How hot is that pot? How scratchy is that coat? Our skin's "sensate" abilities clue us in.

Here's a simple experiment that allows your child to make a simple version of a research tool called the "Von Frey Device" which scientists use to measure our skin's "detection threshold"—the smallest sensation necessary for the nerves in our skin to "feel" something.

What You Need:

- 5 popsicle sticks
- Sharpie pen
- Paper
- Ruler
- Scissors
- Tape
- Polyester fishing line in 5 different widths
- Volunteers willing to take a "touch test"



What to Do:

1. To make your "Von Frey Device," have your fourth grader cut five 2" lengths of fishing line—one from each strand width. Write the size of the strand (which can be seen on the spool) on the popsicle stick with the sharpie pen, and use the tape to anchor the end of the fishing line to it.
2. Make a data table: Title your page, "Touch Data," and down the left side write: palm, pinkie tip, inside forearm, outside forearm, back of neck, cheek, and elbow. Across the top of the page, write the names of your volunteers—try for a minimum of five, and a maximum of eight or so. Use a ruler to fill in the table's row and column lines.
3. Now you're ready for your volunteers. Invite each one to wear just a tee shirt, so that the skin on the arms is exposed. Have the volunteers come to a plain table, one by one, sit down with one arm on the table, and wear a blindfold.
4. Then invite your fourth grader to test for that "touch threshold." Start with the finest strand of fishing line, and touch the tip of it to your volunteer's skin, just hard enough so that the line bends very slightly. Does your subject feel anything? If so, write the diameter of the fishing line in the box for that part of the body, and move to a new part. If not, keep going with thicker and thicker fishing line until the subject feels something.
5. Repeat this experiment on the rest of the parts of the arm, and on the subject's neck, as shown on your chart; and do the same for the rest of your volunteers.
6. Now the fun part: what parts of our skin are most sensitive? (psst: ever notice that when you get bug bites in the summer, a lot of them end up on the upper arm, and not the forearm? That's a clue...)