

## FINGERPRINTS

Have you ever left fingerprints on a drinking glass or a mirror? If you look very closely at those prints, you'll see interesting designs full of loops and swirls. Those designs are right there in the skin on your fingertips.

Humans, apes, and monkeys all have **ridges** (bumps) and **furrows** (grooves or lines) on their fingers and toes that help us to grip objects and prevent them from slipping. The different patterns on our fingertips make up a fingerprint. Each print is unique. No two individuals have the exact same pattern, and you won't have the exact same pattern on more than one of your fingers (or toes!).

There is a general design pattern with the ridges in fingerprints that are divided into 3 major pattern types: **loop, whorl, or arch**. You can have one, two, or all three of these pattern types within your ten separate fingerprints.

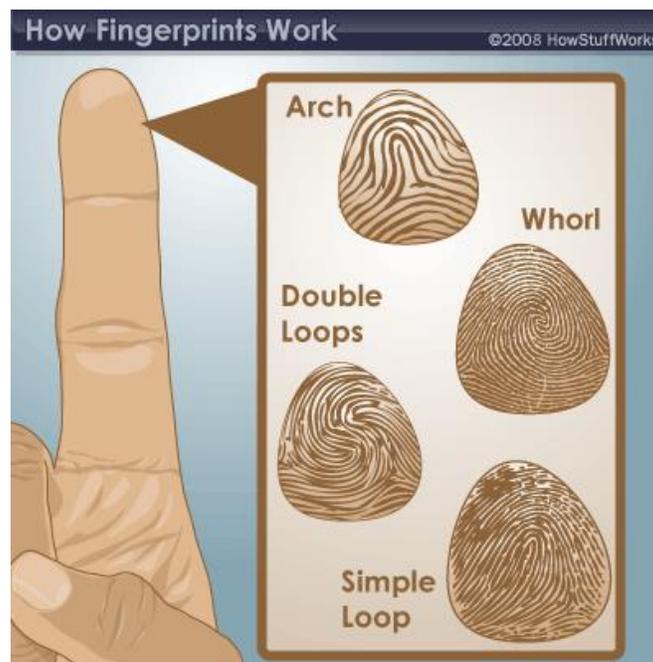


Image from <https://science.howstuffworks.com/fingerprinting1.htm>

Fingerprint examiners look at different levels of detail to find unique patterns and other features when identifying fingerprints. It's a form of **forensic science**, which uses science and technology to investigate crimes by examine prints, fibers, bone, and other materials usually found at a crime scene. Those discoveries can help identify the criminal or the victim.

Fingerprints are also useful in managing modern technology. **Biometrics** is the study of precise body measurements and calculations of physical human characteristics. Our unique physical characteristics can be used for **automated recognition** (identification by a machine and not a human) – like a fingerprint that is used to unlock a smart phone.

Here is what you will need to collect and analyze your fingerprints:

- Several sheets of white paper
- Pencil
- Magnifying glass
- Clear tape

Trace the outline of your hand onto a sheet of white paper. On another sheet of white paper, scribble a small area of the paper with your pencil to create a nice layer of gray shading.

Rub your finger over that gray area until there's a good coating of it on your finger. Your fingertip should be quite gray.

Place a small piece of tape over the pad of your finger, not the fingertip. Press down to collect the print, then carefully peel off the tape and stick it onto the corresponding finger of the handprint you drew on the first sheet of paper. Repeat with each finger.

Examine the fingerprints with your magnifying glass. What patterns do you see? Can you identify which main pattern types you have on your fingers?

Compare your prints with other family members. Do they look alike at all? What similarities and differences can you find?

### **ADDITIONAL RESOURCES**

<https://science.howstuffworks.com/fingerprinting1.htm>

<https://www.connectionsacademy.com/resources/instructographics/fingerprinting>

<https://healthresearchfunding.org/10-interesting-facts-fingerprints/>

Books available from the Washoe County Library System:

*Ed Emberley's Complete Funprint Drawing Book* by Ed Emberley

*Ed Emberley's Great Thumbprint Drawing Book* by Ed Emberley

*Fingerprints: Crime-Solving Science Experiments* by Kenneth G. Rainis

*Officer Panda, Fingerprint Detective* by Ashley Crowley