

Fingerprint Info

The study of fingerprints is called dermatoglyphics. No two fingerprints are alike, even in twins. Fingerprints are “silent witnesses”, or physical evidence, at a crime scene. The pattern on your hands and feet are called friction ridges. It’s these ridges that make fingerprints. The number, shape, and location of each ridge are what make every person unique, and they do not change with growth or age. Injuries such as superficial burns, abrasions, or cuts do not affect the ridge structure, either. Each tiny little ridge has sweat glands on it that produce sweat and transfer it to the surfaces you touch.

There are three different types of fingerprints: patent, plastic, or latent. **Patent** prints can be seen without chemicals or equipment. Fingers that are dirty from blood, paint, or ink leave patent prints. Sweat and oil can also leave patent prints on glass or metal surfaces. **Plastic** fingerprints are molded into soft surfaces, and may be in soap, wet cement, or wax. **Latent** prints must be developed with chemicals or equipment before they can be seen.

The Federal Bureau of Investigation (FBI) recognizes eight different types of fingerprint patterns: radial loop, ulnar loop, double loop, central pocket loop, plain arch, tented arch, plain whorl, and accidental. **Whorls** are usually circular or spiral in shape. **Arches** have a mound-like contour, while **tented arches** have a spike-like or steeple-like appearance in the center. **Loops** have concentric hairpin or staple-shaped ridges and are described as “**radial**” or “**ulnar**” to denote their slopes; **ulnar loops** slope toward the little finger side of the hand, radial loops toward the thumb.

Loops constitute about 65 percent of the total fingerprint patterns; whorls make up about 30 percent, and arches and tented arches together account for the other 5 percent. The most common pattern is the ulnar loop.

Fingerprints are classified in a three-way process: by the shapes and contours of individual patterns, by noting the finger positions of the pattern types, and by relative size, determined by counting the ridges in loops and by tracing the ridges in whorls. The information obtained in this way is incorporated in a concise formula, which is known as the individual’s fingerprint classification.

History of Fingerprinting

Sir Francis Galton suggested the first elementary system for classifying fingerprints based on grouping the patterns into arches, loops, and whorls. Galton’s system served

Fingerprint Activities



Studying Fingerprints

Study the sample analysis of the thumbprint to see if you can determine what type of print it is. Use the ridge pattern chart to identify details of the thumbprint.

Materials

- Sample analysis of thumbprint
- Pencil
- Ridge patterns chart
- Magnifying glass

Fingerprint Cards

This card holds all ten fingerprints, both "rolled" (in the top 2 rows) and "flat" (in the bottom row). Law enforcement do both types so they can verify the order and accuracy of the rolled prints. If you want to fill out the top of the fingerprint card, it might work better if you do it before you add your prints to the bottom.

To make your own fingerprints, put each finger on the ink pad and roll it from one side to the other to get ink on the whole finger. For each rolled print, once you have ink on your finger, roll it from one side to the other in the correct box. Only put ink on one finger at a time and wipe it off before continuing on to the next finger. You might want to have someone help you roll your prints.

For the prints at the bottom of the card, put your thumbs in the ink pad and press them flat in the thumb boxes in the bottom row. Next, place the other 4 fingers from one hand in the ink and press them flat in the bottom row of the card. Repeat for the other hand.

Materials

- Fingerprint cards
- Ink pads

FINGERPRINTS

FIGURE 16



Sample Analysis of Thumbprint



This fingerprint shows a radial loop pattern. Some fingerprint ridge details are identified.



Examples of Patterns



Fingerprint patterns. From top left to bottom right: loop, double loop, central pocket loop, plain whorl, plain arch, and tented arch.

Courtesy of the Federal Bureau of Investigation

Source: <https://www.britannica.com/topic/fingerprint>

Fingerprinting Card



LAST NAME, FIRST NAME, MIDDLE NAME, SUFFIX		ALIASES			DATE OF BIRTH			MM DD YY	
STATE IDENTIFICATION NO		SOCIAL SECURITY NO		SEX	RACE	HEIGHT	WEIGHT	EYES	HAIR
SIGNATURE OF PERSON FINGERPRINTED		SIGNATURE OFFICIAL			DATE TAKEN			MM DD YY	
1 R THUMB	2 R INDEX	3 R MIDDLE	4 R RING	5 R LITTLE					
6 L THUMB	7 L INDEX	8 L MIDDLE	9 L RING	10 L LITTLE					
LEFT FOUR FINGERS TAKEN SIMULTANEOUSLY		L THUMB	R THUMB	RIGHT FOUR FINGERS TAKEN SIMULTANEOUSLY					