

# ILLINOIS

## Extension

# 4-H Club GO TO Resources



December 2019

### Lesson Objectives:

#### Club members and parents will:

- To understand that fingerprints are unique to every person .
- To learn the different types of fingerprint patterns .
- To experimentally examine how these different patterns look.

**Time:** 15-20 minutes

### Equipment and supplies:

- ink
- white balloons
- baby wipes to clean hands after using ink

### Preparations:

- Review Lesson
- Gather equipment and supplies
- Print additional copies of this resource for members to see the various types of fingerprints.

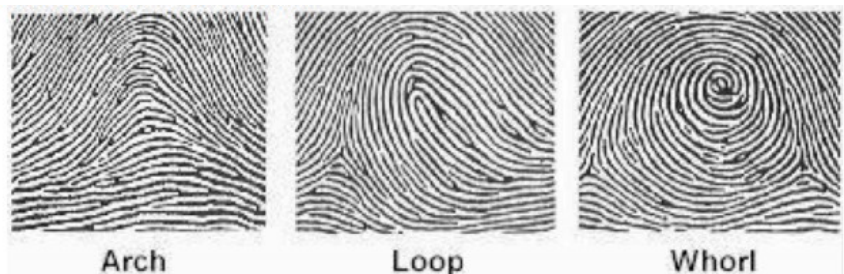
## 4-H Fingerprint Forensics

Fingerprints are one of the best and easiest ways to identify a person. Fingers have slightly raised lines that form patterns, and every finger has its own unique pattern. Natural oils from the skin are left behind when a person touches something, leaving a fingerprint pattern. Police use fingerprints to solve crimes. Forensic scientists study fingerprint patterns to match them to a particular person. They look for basic types of patterns in the fingerprint lines.

### What kind of fingerprints do you have?

1. Choose a finger. Press your finger pad straight down onto an ink pad.
2. Press your inked finger straight down onto the flat balloon. Don't slide it around or the print will smear! Wipe off your finger with the baby wipes.
3. Allow the ink to dry onto the balloon. Then repeat steps 1 and 2 with a different finger and make another print on a clean part of the balloon. Try one more finger if there's room on the balloon.
4. Blow up the balloon slightly so the prints get larger. If they look blurry, let out some air until they are clearer. Tie the end of the balloon.
5. Compare your prints to the patterns in the photo below. Do you have an arch, loop, or whirl at the center of your print? Are both prints the same?

Three of the basic fingerprint patterns are arch, loop, and whorl.

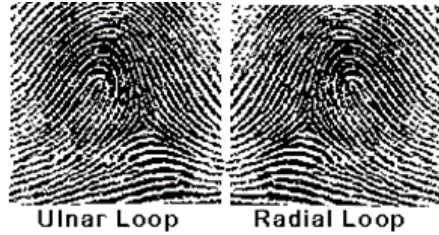


Arch

Loop

Whorl

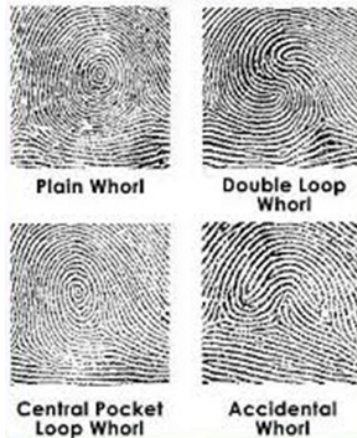
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**Loops**

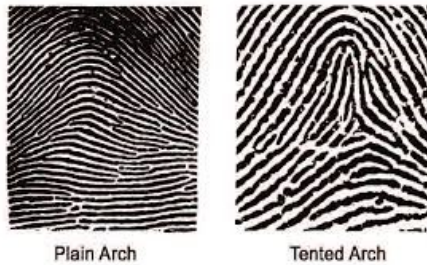
- Most common type ... average 65% of people
- Radial loops ... the loop enters and exits the finger on the side closest to the thumb
- Ulna loops ... the loop enters and exits the finger on the side closest to the pinky finger

**Whorls**



- 30 - 35% of people
- Whorls have at least one ridge that makes (or tends to make) a complete circuit.
- Central pocket ... elevated, usually smaller whorl pattern
- Double loop ... whorl made of two distinct loop patterns
- Accidental... combination of all of the above

**Arches**



- Only 5% of people
- Arches are the simplest type of fingerprints that are formed by ridges that enter one side of the print and exit on the other.
- Tented Arch ... Similar to the plain arch, but has a spike in the center

**Conclusion**

Tally up how many members have each of the 3 types of fingerprints to find the most common and least common types in the room. Discuss how the fingerprint of each type are similar and different and comment on the fact that they all are unique.

## University of Illinois Extension — Unit 2 — Boone, DeKalb, Ogle Counties

### Boone County Extension Office

205 Cadillac Court, Suite 3

Belvidere, IL 61008-1733

Phone: 815-544-3710

Program Coordinator: Melissa Irwin

Email: [mmirwin@illinois.edu](mailto:mmirwin@illinois.edu)

### DeKalb County Extension Office

1350 West Prairie Drive

Sycamore, IL 60178-3166

Phone: 815-758-8194

Program Coordinator: Nicole Groezinger

Email: [groezing@illinois.edu](mailto:groezing@illinois.edu)

### Ogle County Extension Office

421 W Pines Rd, Ste 10

Oregon, IL 61061

Phone: 815-732-2191

Program Coordinator: Jodi Baumgartner

Email: [jbmgrtnr@illinois.edu](mailto:jbmgrtnr@illinois.edu)

**Unit 2 Educator:** Johnna Jennings

Email: [bjennin@illinois.edu](mailto:bjennin@illinois.edu)



## Sources & Additional Lesson info:

4-H Club GO TO Resources is being offered to 4-H clubs in Boone, DeKalb and Ogle Counties as a way to enrich and enhance 4-H experiences and programming at the club level. It is the goal of the Extension staff to assist 4-H leaders and officers in providing simple hands-on activities on a monthly basis that can broaden the 4-H club experience and as a result heighten positive youth development.

**Resources:** based on the Kids Science Challenge Science Projects—Learn the Secrets of Fingerprints Activity on <http://www.kidsciencechallenge.com/>

**Prepared by:** Nicole Groezinger, 4-H Youth Development Program Coordinator

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