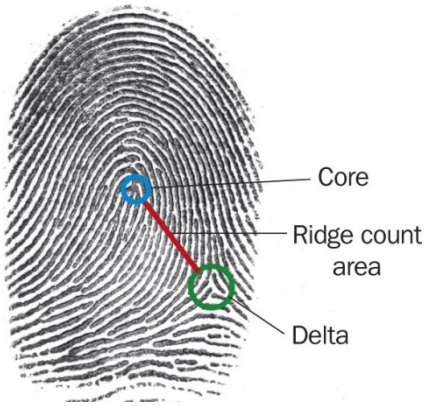
Fingerprint Reference Sheet

Vocabulary:

- Dactylogram: Another fancy word for a print made by a finger.
- Latent Print: Prints found at the crime scene.
- Minutiae: Points on a fingerprint where ridges change shape. These are used to identify and characterize fingerprints. Researchers should find as many minutiae on a latent print as they can.



Every individual has their own set of fingerprints, making fingerprints individual evidence. Fingerprints are the most common piece of trace evidence found at a crime scene. Two things a forensic examiners looks for on a fingerprint are the presence of a core and deltas. The **core** is the center of a loop or whorl. A triangular region located near a loop is called a **delta**. Some of the ridge patterns near the delta will rise above and some will fall below this triangular region. Sometimes the center of the delta may appear as a small island. A ridge count is another characteristic used to distinguish one fingerprint from another. To take a ridge count, an imaginary line is drawn from the center of the core to the edge of the delta. In the figure to the right, the red line shows the area used in the ridge count from the delta to the core area.

3 Basis Types of Fingerprints

(And the percent of people who have them)

Arches 5% *Whorls 30%* *Loops 65%*

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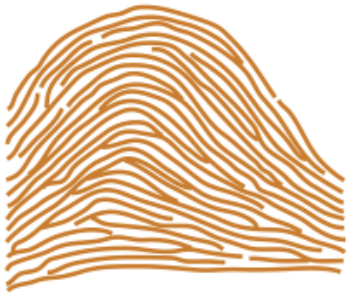
Types of Arches: Arches are the simplest type of fingerprints that are formed by ridges that enter on one side of the print and exit on the other. No deltas are present.



A. Plain arch

Delta

B. Tented arch

Types of Whorls: Whorls have at least one ridge that makes (or tends to make) a complete circuit. They also have at least two deltas. If a print has more than two deltas, it is most likely an accidental.

Deltas

A. Plain whorl

Deltas

B. Central pocket loop whorl

Deltas

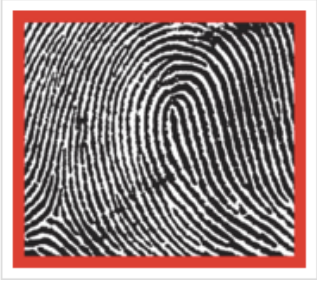
C. Double loop whorl

Deltas

D. Accidental whorl

Types of Loops: Loops must have one delta and one or more ridges that enter and leave on the same side. These patterns are named for their positions related to the radius and ulna bones.

L- Ulnar Loop
R- Radial Loop



L- Radial Loop
R-Ulnar Loop

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Ridge Characteristics: Minutiae Patterns

Name	Visual Appearance
1. Ending ridge (including broken ridge)	1. 
2. Fork (or bifurcation)	2. 
3. Island ridge (or short ridge)	3. 
4. Dot (of very short ridge)	4. 
5. Bridge	5. 
6. Spur (or hook)	6. 
7. Eye (enclosure or island)	7. 
8. Double bifurcation	8. 
9. Delta	9. 
10. Trifurcation	10. 

Lifting Prints

1. Dusting: A brush is used to dust powder above a print. The brush must have very soft bristles as to not move the print. Camel hair is usually used.
2. Super Glue Fuming: Lift prints off hard nonporous surfaces such as glass and plastic.
3. Iodine Fuming: For lifting prints of paper.

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AFIS

The Integrated Automated Fingerprint Identification System, or IAFIS, is a national fingerprint and criminal history system that responds to requests 24 hours a day, 365 days a year to help our local, state, and federal partners—and our own investigators—solve and prevent crime and catch criminals and terrorists. IAFIS provides automated fingerprint search capabilities, latent search capability, electronic image storage, and electronic exchange of fingerprints and responses.

What is included in IAFIS: Not only fingerprints, but corresponding criminal histories; mug shots; scars and tattoo photos; physical characteristics like height, weight, and hair and eye color; and aliases. The system also includes civil fingerprints, mostly of individuals who have served or are serving in the U.S. military or have been or are employed by the federal government. The fingerprints and criminal history information are submitted voluntarily by state, local, and federal law enforcement agencies.

How big it is: IAFIS is the largest criminal fingerprint database in the world, housing the fingerprints and criminal histories for more than 70 million subjects in the criminal master file, along with more than 34 million civil prints. Included in our criminal database are fingerprints from 73,000 known and suspected terrorists processed by the U.S. or by international law enforcement agencies who work with us.

How fast it works: The average response time for an electronic criminal fingerprint submission is about 27 minutes, while electronic civil submissions are processed within an hour and 12 minutes. IAFIS processed more than 61 million ten-print submissions during Fiscal Year 2010.

When it started: IAFIS was launched on July 28, 1999. Prior to this time, the processing of ten-print fingerprint submissions was largely a manual, labor-intensive process, taking weeks or months to process a single submission. The FBI has been the national repository for fingerprints and related criminal history data since 1924, when more than 800,000 fingerprint records from the National Bureau of Criminal Identification and Leavenworth Penitentiary were consolidated with Bureau files. The first use of computers to search fingerprint files took place in October 1980.

What's new: While IAFIS has been an effective system, criminal and terrorist threats have evolved over the past decade. Today's environment demands faster and more advanced identification capabilities. The Next Generation Identification program, or NGI, represents a quantum leap in fingerprint identification that will help us in solving investigations, preventing crime, and apprehending criminals and terrorists.
NGI—which delivers an incremental replacement of IAFIS—provides automated fingerprint and latent search capabilities, electronic image storage, and electronic exchange of fingerprints to more than 18,000 law enforcement agencies and other authorized criminal justice partners 24 hours a day, 365 days a year. Upon completion, NGI will have the ability to process fingerprint transactions more effectively and accurately. With the delivery of NGI Increment 4 in the summer of 2014, NGI will effectively replace IAFIS.