* **The Fingerprint Principles**
  + - A fingerprint is an individual characteristic; no two people have been found with the exact same fingerprint pattern.
    - A fingerprint pattern will remain unchanged for the life of an individual; however, the print itself may change due to permanent scars and skin diseases.
    - Fingerprints have general characteristic ridge patterns that allow them to be systematically identified.
* **The Fingerprint Classes**
  + There are 3 specific classes for all fingerprints based upon their visual patterns: Arch (plain arch, tented arch), Loop (radial loop, ulnar loop), Whorl (plain whorl, central pocket whorl, double loop whorl, accidental)
* **Fingerprint Fun Fact**
  + 60% of people have loops, 35% have whorls, 5% have arches
  + Dactyloscopy is the study of fingerprint identification.  Police investigators are experts in collecting “dactylograms”, otherwise known as fingerprints.
* **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.
    - Plain Arch: Ridges enter on one side and exit on the other side.
    - Tented Arch: Similar to the plain arch, but has a spike in the center.
* **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.
    - Ulnar Loop (Right Thumb) - Loop opens toward  right or the ulna bone.
    - Radial Loops (Right Thumb) - Loop opens toward the left or the radial bone
* **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.
  + Draw a line between the two deltas in the plain and central pocket whorls. If some of the curved ridges touch the line, it is a plain whorl.  If none of the center core touches the line, it is a central pocket whorl.
    - Double loop whorls are made up of any two loops combined into one print.
    - Accidental whorls contain two or more patterns (not including the plain arch), or does not clearly fall under any of the other categories.
* **Ridgeology**
  + The study of the uniqueness of friction ridge structures and their use for personal identification.
  + As we have learned in our first lesson, a fingerprint is made of a series of ridges and valleys on the surface of the finger. The uniqueness of a fingerprint can be determined by the pattern of ridges and valleys as well as the minutiae points, which are points where the ridge structure changes.
* **Fingerprint Identification**
  + When minutiae on two different prints match, these are called points of similarity or points of identification. At this point there is no international standard for the number of points of identification required for a match between two fingerprints. However, the United Kingdom requires a minimum 16 points while Australia requires 12.
* **Automated Fingerprint Identification System (AFIS)**
  + AFIS is a computerized system capable of reading, classifying, matching, and storing fingerprints for criminal justice agencies. Quality latent fingerprints are entered into the AFIS for a search for possible matches against the state maintained databases for fingerprint records to  help establish the identity of unknown deceased persons or suspects in a criminal case.
* **Latent Prints**
  + Latent prints are impressions left by friction ridge skin on a surface, such as a tool handle, glass, door, etc.
  + Prints may be collected by revealing them with a dusting of black powder and then lifted with a piece of clear tape.
  + Some investigators use fluorescent powder and UV lights to help them find latent prints on multi-colored or dark surfaces.
  + Magnetic powder can also be used to reveal latent prints. This type of powder works better on shiny surfaces or plastic baggies or containers.
  + The cyanoacrylate fuming method (often called the super glue method) is a procedure that is used to develop latent fingerprints on a variety of objects.
  + Ninhydrin is a chemical that bonds with the amino acids in fingerprints and will produce a blue or purple color. It is used to lift prints from surfaces such as paper and cardboard.