



Minds in Motion

Become a Fingerprint Detective!

Activity Rundown:

Time to put on your detective cap! Just like real forensic scientists and investigators, we'll be analysing and collecting actual fingerprints in this activity. Grab some other willing folks in your household and see how similar (or different) your fingerprints turn out to be!

You will need:

- + Graphite pencil
- + Clear tape
- + White paper
- + Magnifying glass

Let's do it!

1. Place your hand palm down on a piece of white paper and using a pencil, trace an outline of your hand.
2. On a separate piece of paper, scribble hard in a small section of paper using a pencil.
3. Using the same hand you traced on the paper, rub each finger pad gently in the section of graphite until your fingerprint is grey.
4. Take 1 inch pieces of tape and place the sticky-side directly on your graphite covered fingerprints. You may need an extra person to help with this step!
5. Carefully remove the tape. You should be able to see your fingerprint clearly on the tape!
6. Place the corresponding fingerprints to their correct finger on your hand outline.
7. Take a look at the background information before proceeding to the next step!
8. Analyse the fingerprints you have collected and label the fingerprint patterns you're able to see.
9. Collect as many fingerprints as you can to compare and contrast!

Background:

Forensic science

- Forensic science, also known as **criminalistics**, is the application of science during criminal investigation.
- It involves a blend of biology, chemistry, and physics in order to analyze evidence to solve crimes!



Minds in Motion

Fingerprints

- Fingerprints are unique patterns, made by **friction ridges** (raised) and **furrows** (recessed), which appear on the pads of the fingers and thumbs.
- There are also fingerprint patterns on your toes and palms of both your hands and feet!
- **No two people will have the same fingerprint pattern.** Not even identical twins!
- Your fingerprints were formed when you were a tiny, developing baby in your mother's womb.
- Pressure on the fingers from the baby touching and interacting with their surroundings create friction ridges and furrows, the faint lines you see on your fingers and toes. These ridges are completely formed by the time a fetus is 6 months old.
- A person's fingerprints remain essentially **unchanged** throughout their lifetime. As new skin cells form, they remain cemented in the existing friction ridge and furrow pattern.

Fingerprint patterns

- Fingerprint patterns are grouped into three distinct types: **loops, whorls, and arches.**



LOOPS

WHORLS

ARCHES

- **Loops** are patterns that curve back onto themselves to form loops. There are **radial loops** that point towards your thumb and **ulnar loops** that point towards your pinky.



Minds in Motion

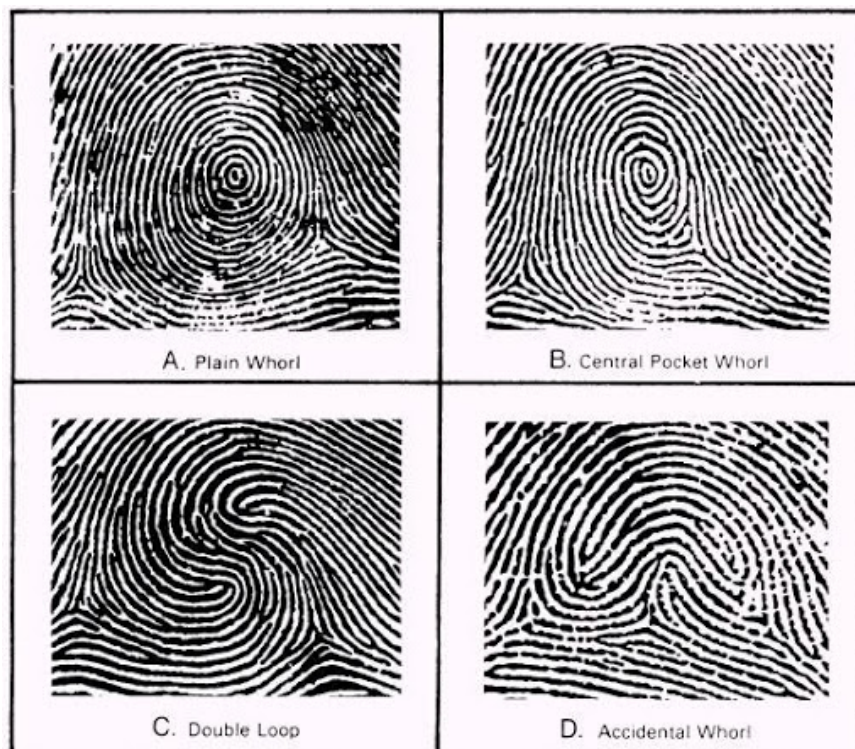


(a)
radial Loop



(b)
ulnar Loop

- **Whorls** form circular or spiral patterns, like tiny whirlpools! There are four groups of whorls: plain, central pocket loop, double loop, and accidental loop.



- **Arches** create a wave-like pattern and include **plain arches** and **tented arches**.



Minds in Motion



1. Plain arch.



2. Tented arch.

Resources:

<http://www.forensicsciencesimplified.org/prints/principles.html>

Reach out!

We would love to hear from you about all the amazing STEM projects you are doing at home! Show us your finished products on any of the following social media platforms by tagging us or by using the following hashtags. We hope these projects have brought some excitement to your day during these difficult times.

Let us know how we did! Please [click here](#) to fill out a short survey on how well we did and what you would like to see more of in the future. Thank you!

Twitter: **@MyMindsInMotion**

Facebook: **@mindsinmotion2014 & @ucactiveliving**

Instagram: **@ucalgaryactive**

Please use the following hashtags!

#ucalgarycamps #ucalgarytogether