



Fingerprinting and Fingerprint Identification Lab Health Science 20



PURPOSE: To collect, preserve, analyze, and categorize fingerprints. To applying this knowledge to solve a crime by identifying a perpetrator.

MATERIALS:

You will need:

- Pencil
- Piece of paper
- Fingerprint Identification Template
- Fingerprint Pattern Identification Sheet
- Tape

NOTE: The tape is wide and each piece of tape can be split into two!

PROCEDURE:

Get into groups of 3 before completing the following:

Part A. Fingerprinting using Graphite

1. Create a dark black patch of graphite on a piece of paper using a soft pencil.
2. Rub your right thumb across the graphite patch. Use the entire pad of the finger, not just the tip!
3. Lay a piece of tape over the blackened finger then remove it smoothly to lift the fingerprint.
4. Stick the tape and fingerprint onto the index card provided. **Write your name on the card** and immediately **submit to your teacher for assessment**.
5. Repeat this process **four** more times. Left index (pointer) finger and left thumb, right index (pointer) finger and right thumb. This time stick the tape in the appropriate box in the **Fingerprint Profile Data Table (see last page)**.
6. Next use the magnification lenses to examine the ridge patterns of your fingers and move on to the lab questions.

LAB QUESTIONS:

Please complete the following questions as a group. Record your answers on a piece of looseleaf and ensure you and your partners name are on the top.

Note: you might need a little help from google with a few of these.

1. Which of the **Three Basic Fingerprint Patterns** (loop, whorl, or arch) most closely aligns with your **left thumbprint**?
2. Which of the **Nine Specific Fingerprint Patterns** does your **left thumbprint** most closely resemble?
HAND IN YOUR FINGERPRINT DATA TABLE AFTER YOU ANSWER QUESTION 2
3. What are the chances of you having the exact same fingerprint as someone else in the class? The entire school? What about in all of Canada?
4. Why do humans have fingerprints?
5. How do fingerprints form?
6. Would identical twins have the exact same fingerprints?
7. Why are fingerprints important to forensic scientists?
8. If there are only **Nine Specific Fingerprint Patterns** how can fingerprints be used to identify criminals?
9. Can a person change or remove his or her fingerprints?

Three Basic Fingerprint Classifications (Loops, Whorls, and Arches)

Fingerprints have three main classes of friction ridge:

- **Loops** have lines that enter and exit on the same side of the print. They look like an upside-down U.
- **Whorls** have circles that spiral and do not exit on either side of the print. They look like a bull's eye.
- **Arches** have lines that start on one side and rise and exit on the other side of the print. They look like a hill.



loop



whorl



arch

Nine Specific Fingerprint Patterns



ARCH



TENTARCH



RIGHT LOOP



LEFT LOOP



DOUBLE LOOP



RIGHT POCKET LOOP



LEFT POCKET LOOP



WHORL



MIXED FIGURE

Part B. Who Dunnit?

A fingerprint has been lifted from a crime scene and it is up to your group of four forensic fingerprint experts to determine who dunnit.

1. Each group will receive a suspects **Right Thumbprint**.
2. Your group must attempt to match the suspects fingerprint to our fingerprint database in order to determine who dunnit.
3. Each group will be told when it is their turn to assess our fingerprint database. Groups should complete the lab questions while they are waiting.
4. Do not share you fingerprint analysis (who dunnit) with other forensics teams.
5. Under your answers to the lab questions record who (according to your forensic team) committed the crime.



Fingerprint Profile Date Table

Group Member #1 First and Last Name _____

Left Index Finger	Left Thumb	Right Index Finger	Right Thumb

Group Member #2 First and Last Name _____

Left Index Finger	Left Thumb	Right Index Finger	Right Thumb

Group Member #3 First and Last Name _____

Left Index Finger	Left Thumb	Right Index Finger	Right Thumb