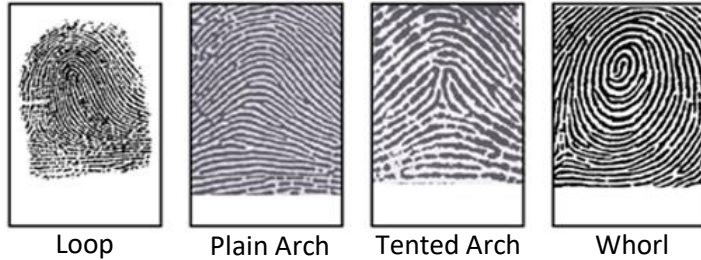


## Fingerprint Patterns

Read “between the lines” to find patterns in fingerprints!



Loop

Plain Arch

Tented Arch

Whorl

Fingerprinting is a fun way to strengthen observation and classification skills.

### Activity Challenge

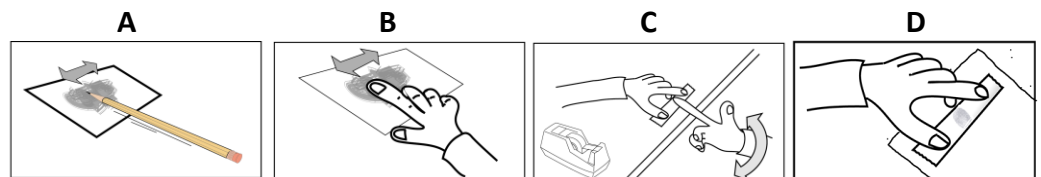
Capture and observe fingerprints to classify unique patterns!

### Preparation

1. Review materials list and gather needed items.
2. Copy the **fingerprint table** on the next page onto a sheet of paper.
3. Ask another person to assist during the activity (optional).

### To Do

1. Rub the side of a sharpened pencil tip onto a sheet of paper, to darken a 1-inch square area with the graphite from the pencil (see graphic **A** below).
2. Rub or roll one of your fingertips onto the darkened area, to transfer some of the graphite onto your fingertip to darken it (**B**).
3. Tear off a 2-inch piece of clear adhesive tape. Carefully place the tape with the adhesive side up on the table. Hold the ends of the tape firmly in place using the thumb and forefinger of the hand not being fingerprinted.
4. **Press and Roll**, but DO NOT SLIDE the tip of the finger onto the sticky side of the tape with a moderate amount of pressure (**C**). The graphite on the fingertip should transfer leaving a clearly discernable image. If not, reapply graphite as in step 2 and retry with a new piece of tape.
5. Place the tape with the fingerprint, adhesive side down, onto the appropriate box for this finger in the fingerprint table you drew (**D**).
6. Clean your darkened finger with a moist towel or wet wipe.
7. Repeat this process for all your remaining fingers.
8. Clean up the area when done.



### Material Needed

- Pencils (soft #2)
- Clear adhesive tape
- Paper towels moistened with soapy water, or packaged pre-moistened wet wipes
- Copy paper or notebook paper

### Grade Range

3-5

6-8

### Topics/Skills

Science: Inheritance & Variation of Traits, Patterns

### Learning Standards

NGSS: [Life Science](#)

### Duration

20-30 minutes

### Prep Time

10 minutes

**Observations**

Observe the patterns of your fingerprints. Name the pattern on each finger by referring to the figures at the top of page one and illustrated in **The Science behind the Activity** section, below. Which pattern(s) do you see? Describe how you determined which type of pattern each finger shows.

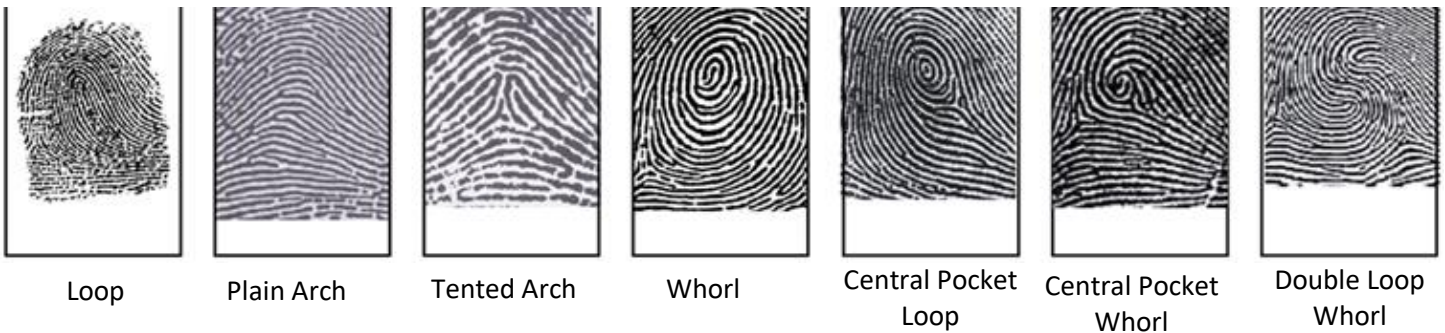
**Extensions**

- Use this procedure to capture and compare fingerprints from different friends or family members.
- Explore the origins of fingerprints with this YouTube video (2:30) - <https://bit.ly/2AZAFCW>

**The Science behind the Activity**

Every fingerprint is thought to be unique, so fingerprints are often used to identify specific individuals. Identical twins have different fingerprints even though their genetic material (DNA) is the same! The fingerprint of a finger after healing from a minor cut or injury is usually the same pattern as before the injury. When a person touches something, they can leave behind a **latent** (not visible) fingerprint impression. The fingerprint is created by the finger’s **insensible** (unfelt) perspiration (sweat). This moisture is always present on the surface of the fingers and can leave detectable fingerprints on many surfaces. The most found patterns are variations of loops, whorls, and arches. These patterns, as shown below, are used to classify fingerprints to aid in identification. Detailing interruptions in the flow of skin ridges, known as minutiae, enable fingerprint mapping with accuracy necessary for legal identification.

**Examples of Types of Fingerprint Patterns**



**Fingerprint Table**

Right Thumb	Right Index	Right Middle	Right Ring	Right Pinky
Left Pinky	Left Ring	Left Middle	Left Index	Left Thumb