

Welcome to *The Home Zone*, Science and Children's new column that presents simple everyday science activities for children and their families to do together. We hope you'll find the activities a fun and easy way to spend quality time with your children and learn something new at the same time.

This month we consider fingerprints—a "handy" physical feature that we all have but are unique to each one of us.

Get Familiar with Fingerprints

Fingerprints are made up of ridges in the skin that form lines of many different shapes and sizes. They are formed before you are born and never change throughout your life. Your fingerprint might contain an *arch*, a *loop*, a *whorl*, or a *mixture* of these. These three major patterns and their variations distinguish fingerprints into different types. In addition to the lines in a fingerprint that you can see, there are tiny patterns made up of distinct points between and at the end of fingerprint ridges, called *minutiae*. These points are what make each fingerprint truly unique.

Why Are Fingerprints Important?

In ancient times, fingerprints were used to seal important papers or business deals. It wasn't until hundreds of years later that fingerprints were discovered to be unique to individuals and to have many applicable uses. The most familiar use of fingerprints is to solve crimes. Whenever you touch something, you leave behind your fingerprint. If your hands are dirty, the fingerprints are *visible*.

Fingerprints that are not visible to the naked eye are called *latent*. They are produced by naturally occurring substances on the skin. Law enforcement officials have techniques for capturing latent fingerprints and making them visible.

No two fingerprints are alike—not even those of identical twins. Police classify fingerprints by their patterns. With the help of today's computers, the police can attempt to match fingerprints from a crime scene with over 80 million fingerprints in their database.

Fingerprints can also be used in other ways. For example, using measurements of human characteristics for identification is called *biometry*. You may have seen fingerprints on a credit card or seen someone in a movie use their fingerprint to enter a high security area.

Now that you and your family have learned a little about fingerprints, can you guess what type of fingerprint you have? Next, make a set of your own fingerprints and try classifying them into the different types.

(See reverse.)



Arch Fingerprint



Loop Fingerprint



Whorl Fingerprint

You can also access
The Home Zone at
[www.nsta.org/
elementary school](http://www.nsta.org/elementary-school)



Family Fingerprinting

Materials:

- One soft-leaded pencil
- Transparent tape

Time needed:

About 30 minutes

Directions:

1. Rub pencil lead on a piece of paper to create a 3 cm² "inkpad."



2. Rub your finger pad onto the lead square, covering the entire area until the joint.

3. Press a piece of clear tape onto the leaded pad of your fingertip.



4. Lift off the tape—be careful not to touch the print—and place the tape onto its proper square on the graph.

5. Have three friends or family do the same.



6. Investigate the fingerprints and label each one "W" for whorl, "A" for arch, "L" for loop, or "M" for a mixture in the small box next to each fingerprint.

	Thumb	Index	Middle	Ring	Pinky
Me	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Individual 1	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Individual 2	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Individual 3	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>

Questions:

1. What do you observe?
2. Who has loops, whorls, and arches?
3. Does anyone have a mixture?
4. What is the most common type of fingerprint in your group?
5. Can you find differences in the fingerprints that seem similar?