

# FINGERPRINT DETECTIVE

**WARNING** — THIS SET CONTAINS CHEMICALS THAT MAY BE HARMFUL IF MISUSED. READ CAUTIONS ON INDIVIDUAL CONTAINERS AND IN MANUAL CAREFULLY. NOT TO BE USED BY CHILDREN EXCEPT UNDER ADULT SUPERVISION.

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# SAFETY

## Safety Rules

Read these instructions before use, follow them and keep them for reference.

Keep young children, animals and those not wearing eye protection away from the experimental area.

Always wear eye protection.

Store this experimental set out of reach of children under 7 years of age.

Clean all equipment after use.

Make sure that all containers are fully closed and properly stored after use.

Ensure that all empty containers are disposed of properly.

Wash hands after carrying out experiments.

Do not use any equipment which has not been supplied with the set or recommended in the instructions for use.

Do not eat or drink in the experimental area.

Do not allow chemicals to come into contact with the eyes or mouth.

Do not replace foodstuffs in original container. Dispose of immediately.

## First Aid

In case of eye contact: Wash out eye with plenty of water, holding eye open if necessary. Seek immediate medical advice.

If swallowed: Wash out mouth with water, drink some fresh water. Do not induce vomiting. Seek immediate medical advice.

In case of inhalation: Remove person to fresh air.

In case of skin contact and burns: Wash affected area with plenty of water for at least 10 minutes.

In case of doubt, seek medical advice without delay. Take the chemical and its container with you.

In case of injury always seek medical advice.

## CAUTION!

For graphite powder:

May cause eye and skin irritation.

Avoid breathing dust. Do not get in eyes, on skin, or on clothing.

Wash hands thoroughly after handling.

Do not ingest. Use only as instructed.

## WARNING!

Not suitable for children under 3 years.

There is a risk of choking due to small parts that can be swallowed or inhaled.

Keep the packaging and instructions, as they contain important information.

## EXPERIMENT 1: COLLECTING PRINTS

1. Rub your fingers in your hair or on your nose to get some oil on them.

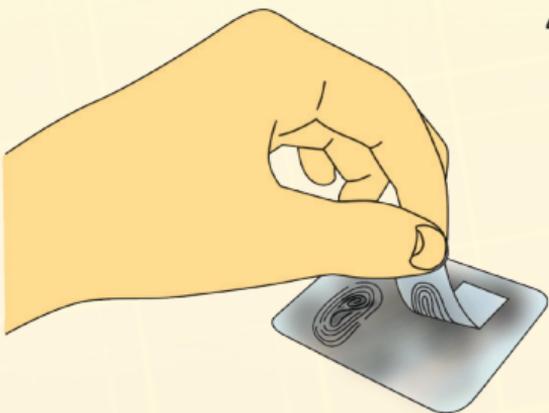


2. Put some fingerprints on the plastic sheet by pressing your fingertips on it.



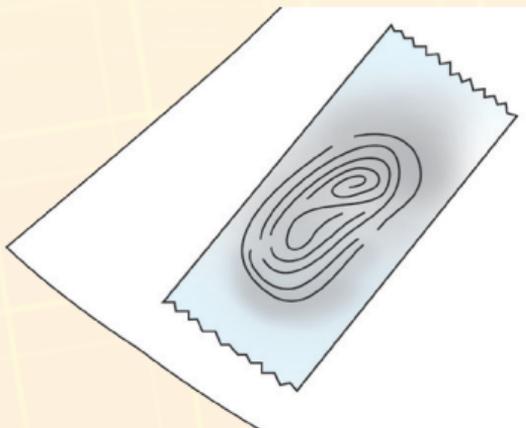
3. Use the pompom to very lightly dust the black powder on the fingerprints. Do not press down, or the fingerprints will smudge.





4. Blow away the excess powder and look for a good, clear fingerprint. Lift the fingerprint from the plastic sheet by placing a piece of clear adhesive tape over it and then peeling the tape up.

5. Put the clear tape with the fingerprint on a piece of white paper so you can see it clearly.



## EXPERIMENT 2: FINGERPRINT FILE CARD

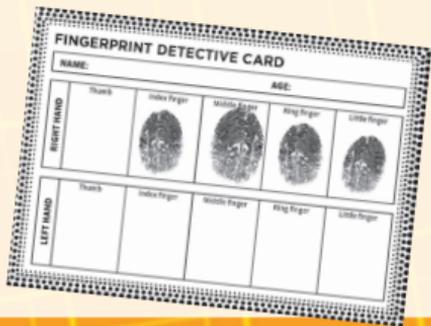
1. Make a fingerprint file card to record your fingerprints. Press your finger into the stamp pad to cover it with ink.



2. Blot your finger once on a separate piece of paper. Then lightly press your fingertip onto the fingerprint card in the correct box.



3. Complete the card for all of your fingerprints. Wash your hands when you are done. Fill in your name and age.

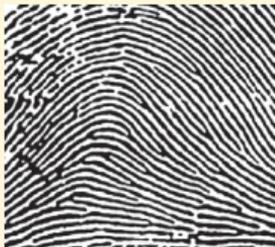


## EXPERIMENT 3: ANALYZE THE PRINTS

1. Analyze the fingerprints by inspecting them with the magnifying glass.
2. Compare them to the fingerprint types on the next panels.



All over our bodies, our skin is covered with glands and pores — including on the fingers. These glands give off sweat, which covers the surfaces of the fingers if there is enough of it. If we touch something with our hands, we leave behind a print of sweat. It has been determined that each one of us has a completely unique pattern of ridges on our fingertips, and that this pattern doesn't change over the course of our lives. Even twins have different fingerprints. For this reason, fingerprints are often used for the conclusive identification of individuals. For example, the police can arrest suspects on the basis of fingerprints used as evidence.



1. Arch



2. Tented Arch



3. Left Loop



4. Right Loop



5. Loop



6. Whirl



7. Double Loop



8. Mixed

According to the "Henry Classification System" used by the FBI, there are eight different basic fingerprint types.

## WHY ARE FINGERPRINTS UNIQUE?

Everyone, even identical twins, have different fingerprints. This is because the tiny ridges and grooves on our fingertips that make up our fingerprints are formed by both **genetic** and **environmental** factors — both before and after we are born.

Fingerprints are partially genetic. This means that parents pass on certain qualities of their fingerprints to their children. But fingerprints are also largely influenced by the conditions inside the womb where the fetus develops before being born. The position of the fetus and the pressure of the amniotic fluid surrounding the baby cause the layer of cells in the skin that makes the fingerprint to bend, warp, and buckle in random ways while the skin cells are first forming. These variables are slightly different for each baby, and thus all fingerprints are somewhat random and all unique. In addition, even after people are born, their fingerprints can change. For example, an injury can form a scar that permanently changes the fingerprint.