

## Cloverbud Investigators: Career Detectives



# Who Did It? Crime Scene



November

### Background:

When we think of crime scene investigation, we may think of famous fictional characters like Sherlock Holmes, the Hardy Boys, Nancy Drew or even cartoon crime fighters like Scooby Doo and the gang, but did you know forensic science started hundreds of years ago? The definition of Forensic Science is: the application of natural science to matters of the law. What this means is that forensic scientists use physics, chemistry, biology and other scientific principles to investigate, identify, and solve crimes.

While the earliest work can be traced back to the Chinese, modern techniques came into use in the 1800's with the first recorded use of various tests which looked for the presence of blood, conducted bullet comparisons, detected toxicology to determine poisoning, and the use of fingerprints to solve crimes. In 1904, the New York City Police Department began collecting the fingerprints of prisoners for criminal investigation. In 1910 the first crime lab opened in France, which used scientific techniques to examine criminal evidence. Since then, equipment and technology has improved greatly, incorporating computers and DNA profiles.

In this lesson, we will look at Dactyloscopy (dak-tuh-los-kuh-pee) the practice of using fingerprints to identify someone. Our fingerprints are made up of a series of ridges and furrows. These form unique patterns of loops and whorls. No two individuals have the exact same fingerprint, not even identical twins. We leave our prints on everything we touch. Sometimes the prints are "visible", such as when our fingers are dirty or oily. Other times they are what we call "latent", and cannot be seen with the naked eye. For latent prints, a technique called dusting is used. It allows invisible prints made by the sweat that is always present on our finger ridges, amino acids, and other organic residue to be seen.

To identify fingerprints, the Federal Bureau of Investigation categorizes them into three main patterns: arches, loops, and whorls. To correctly identify the prints, you will need a controlled set of prints (like the ones below) and the prints found at a scene or crime.



Whorl Pattern

30% of people

Loop Pattern

65% of people

Arch Pattern

5% of people



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**Career Connections:**

- Police Officers, Detectives, and Special Agents
- Private Detective, or Private Investigator
- Fire Inspector
- Lawyer or Judge
- Biological Technician
- Crime Laboratory Analyst
- Crime Scene Examiner
- Criminalist
- Medical Examiner
- Pathology
- Criminal Profiler
- Wildlife Forensic Specialist

**November's Mystery:*****Supplies:***

- Ink Pads
- Finger Print Printouts
- Magnifying Glasses
- Crime Story or Stories
- Soap and Water
- Paper Towels

**Fingerprints**

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

**Science Behind It:**

“Dusting for fingerprints” – fingerprint powder is a fine powder used in dusting for fingerprints. This method allows the particles of the powder to adhere to the residue left by friction ridges on the skin. The powder used normally comes in either white or black, to accommodate dusting on all surfaces. The powder is either talcum based for white or graphite based for black. Sometimes a special fluorescent powder might be used, which shows up under a black light. Dusting is a common method for retrieving “visible” prints left on hard surfaces. To collect prints, investigators take the fingerprint powder and gently blow powder onto the print. Next, they lightly brush the excess powder off with a very soft brush (like a makeup brush), being very careful not to damage the appearance of the print. Next, they photograph the print and then carefully lift the print with clean tape.

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**What to Do:**

**Step 1:** Give each investigator two sets of finger print collection cards, enclosed with this lesson. It's best to print these collection cards on cardstock so they are a little heavier weight.

**Step 2:** Using an ink pad, have each member ink their finger one at a time and place it in the correct box.

**Step 3:** Continue until both cards are done. (Use the same hand for both cards)

**Step 4:** Have them write their name on one set of prints.

**Step 5:** Collect the second unnamed set, (use numbers or initials to keep them connected to their owner.)

**Step 6:** Cut one or two finger prints out and randomly pass them out to the members.

**Step 7:** Now it's time to match the prints to their owner, using a magnifying hand glass to compare the cutout print to all the originals. (To make it more interesting you can attach a little crime story to each set of fingerprints, nothing too graphic for your age group.)

**Optional activity – Dusting for Prints****Materials Needed**

- Fingerprint powder (Fingerprint powder can be purchased online or you can make your own. See recipe below.)
- Dusting brush (this can be a soft bristled makeup brush)
- Scotch tape
- White or Black colored paper



**White Fingerprint powder recipe** – mix  $\frac{1}{4}$  cup of powdered corn starch with  $\frac{1}{4}$  cup of baby powder

**Black Fingerprint powder recipe** – mix either  $\frac{1}{4}$  cup of soot or graphite powder with  $\frac{1}{4}$  cup of powdered corn starch.

**What to do –**

**Step 1** – Find a hard, smooth surface to collect fingerprints, this can be a drinking glass, window, door knob, solid smooth table top, etc.

**Step 2** - Sprinkle a small amount of fingerprint powder over the surface where the print should be.

**Step 3** - Gently brush the excess powder off with the fine, soft-bristled brush.

**Step 4** - Place a piece of tape over the print to “collect it” and tape the print down on a contrasting piece of paper.



***Optional craft idea – make finger print pictures***

There are tons of fingerprint picture ideas on Pinterest, the one we liked was called Fingerprint Alphabet <https://www.easypeasyandfun.com/fingerprint-alphabet-art>

# Fingerprint Alphabet

**A** is for Apple



**B** is for Bee



**C** is for Cat



**E** is for Elephant



**D** is for Dog

**F** is for Flower



**H** is for Horse



**G** is for Giraffe

© Easy Peasy and Fun

All you need are some examples for the kids to look at, some large drawing paper and some finger paint or colored ink pads (even washable markers will work).

\* Be sure to cover all surfaces and have some soapy water and wash clothes close by for finger clean up!

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**Go Over Findings:**

**What is Dactyloscopy?** Dactyloscopy is the practice of using fingerprints to identify someone.

**What are the three main patterns of fingerprints?** Arches, Loops, and Whorls

**What kind of career might use Criminal Investigation skills?**

**Investigate, Create, & Take: Investigators can take with them:**

- ✓ Fingerprint cards
- ✓ Fingerprint art
- ✓ Purchase children's badges like: Police, Fire, Detective (You can often ask your local stations for local resources).

**Sources:**

Crime Scene Science Kit: The Mystery of the Disappearing Diamonds. Home Science Tools.  
[www.homesciencetools.com](http://www.homesciencetools.com)

Fingerprinting: A Lesson on Classification.  
<http://reachoutmichigan.org/funexperiments/agesubject/lessons/prints.html>

**Additional Links:**

Craft sources for finger print art.  
<https://www.easypeasyandfun.com/fingerprint-alphabet-art>

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# Who Did It? Crime Scene



Suspect Name: \_\_\_\_\_



**Fingerprints**

Signature: \_\_\_\_\_

Left Hand



Thumb	Index	Middle	Ring	Pinky
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Right Hand



Thumb	Index	Middle	Ring	Pinky
-------	-------	--------	------	-------



Suspect Name: \_\_\_\_\_



**Fingerprints**

Signature: \_\_\_\_\_

Left Hand



Thumb	Index	Middle	Ring	Pinky
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Right Hand



Thumb	Index	Middle	Ring	Pinky
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Adapted from: [http://cdn.sheknows.com/printables/print/printables\\_fingerprints\\_01](http://cdn.sheknows.com/printables/print/printables_fingerprints_01).

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