

Session 2: Fingerprints



TIME
60 minutes



SIZE
20-25



HANDOUTS
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Session Objective: Youth will learn about fingerprint patterns and ways to take and collect fingerprints.

Warm Welcome (2 minutes)

Greet youth by name as they enter your program area, and engage in meaningful conversation.

Community Builder: Spot the Difference (5-10 minutes)

- **Decide** whether you will have time for your whole group to watch each team perform this activity, or whether several teams must perform at the same time (after the initial team is used to demonstrate the activity for everyone).
- **Remind** youth that one of the most important skills in forensics is attention to detail, so this will test their observation skills.
- **Line up** students in order of birth month (January to December), then “fold” the line. Each youth should be facing another person. This will be their partner.
- **Allow** each pair to determine which partner will go first. This person will have 30 seconds to observe everything they can about their partner.
- After 30 seconds, **ask** the observer to turn around while their partner changes ONE thing about their appearance.
- **Encourage** youth to make subtle changes, but not so subtle that they’re unnoticeable. Examples of acceptable changes are:
 - › Taking out an earring
 - › Taking off a belt
 - › Wearing shoes on the wrong feet
 - › Changing hairstyles
 - › Pushing up sleeves
- **Repeat** with the partners switching roles.

Note: Another option is to read a “whodunit” mystery as a Community Builder for youth to solve.

Group Agreements Review (2 minutes)

Reference the Group Agreements in your program area to remind youth of their commitment to one another.

Supplies Needed

- Paper
- Pencil
- Powdered sugar, cocoa, or chalk powder in jars or plastic baggies
- Small paintbrush of soft hair, not stiff bristles
- Fingerprint tape or other clear adhesive tape
- Whiteboard or flipchart paper
- Whiteboard marker/marker
- Magnifying glass for observing fingerprints

Links to Resources

None

Social-Emotional Skills

- Communication
- Collaboration
- Planning and Carrying Out Investigations

Academic Skills

- Critical Thinking
- Analyzing and Interpreting Information
- Numeracy

Key Terms

None

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1**Main Activity: Fingerprinting** (25-35 minutes)**Preparation**

- **Create** a three-column chart on the whiteboard or flipchart paper with the headings:
 - › Loops
 - › Arches
 - › Whorls
- **Divide** powders into jars or plastic baggies, one per participant.
- **Make** copies of the Fingerprint Exercise handout, enough for one per teen.
- **Arrange** a table with the following supplies:
 - › Pencils/pens
 - › Paper
 - › Fingerprint Exercise handouts
 - › Bags of powder
 - › Paintbrushes
 - › Fingerprint tape

2**Introduce Youth to the Activity:**

- **Explain** that tiny ridges on your skin form patterns made up of three shapes:
 - › Loops
 - › Arches
 - › Whorls
- **Show/draw** images of each shape.



LOOP

WHORL

ARCH

- **Tell** youth: “The patterns formed are called fingerprints. Sweat glands are located between each of these ridges, and it is sweat that leaves fingerprints on everything you touch.”
- **Share** this fun fact: “Everyone in the world has a unique set of fingerprints unlike anyone else, and your fingerprints never change.”

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Step-by-Step Direction

OPTION ONE: Taking Fingerprints

- **Divide** youth into pairs.
- **Distribute** a Fingerprints Exercise handout to each teen.
- **Instruct** youth to rub a pencil on a piece of paper, creating a square as large as their fingertip.
- **Show** youth how to roll their fingers in the graphite and then roll fingers one at a time across the sticky side of a piece of tape.
- **Tell** youth to stick the fingerprinted tape on the corresponding finger on their handout. Their partner can help by holding tape steady and sticking it on the paper. The fingerprinted partner may need to hold the paper steady on the table.
- Once both partners have completed their own worksheets, **instruct** the entire group to classify each set of prints as fitting into either the loop, arch or whorl categories.
- **Instruct** teens to add each as a running tally on the whiteboard or flipchart paper.
- **Ask** for a volunteer to calculate the totals on the tally board.

OPTION TWO: Analyzing Fingerprints

Note: The fingerprinting process could be stressful for some youth. If you feel this might be an inappropriate activity, provide copies of fingerprints for each team to examine and classify.

- **Give** each youth a brush and a small jar/baggie of powder.
- **Tell** youth to make a fingerprint on something in the room such as the doorknob, table or window. (A flat surface is easiest.)
- **Instruct** youth to dip a brush into the powder and dust it onto the fingerprint. The dust will stick to the fingerprint grease.
- **Tell** youth to blow off any excess powder and lay a piece of clear tape on the fingerprint.
- **Instruct** youth to press the tape flat, then peel it off and stick it on a piece of paper.
- **Clean** the dust off the area.
- **Have** students see if they can dust for other fingerprints in the room on different objects.
- Now **challenge** youth to identify each other's fingerprints.
- **Divide** youth into teams and have someone in the group make a fingerprint on a piece of paper. They will share this fingerprint with another group that then has to determine which group member's fingerprint it is.

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Reflection (5 minutes)

Ask participants:

- “What did you notice about the total of loops, arches and whorls of youth in our group?”
- “Did you notice any trends in the type of fingerprints you and your partner have?”
- “What made it easier to dust for fingerprints (type or color of surface, manner of dusting, etc.)?”
- “What made it harder?”
- “Can you think of any uses for fingerprints aside from solving crimes?”

Recognition (5 minutes)

- **Recognize** youth who cleaned up after dusting for fingerprints.
- **Recognize** pairs who worked well together helping to complete the handout.
- **Recognize** youth who participated in the discussion.

Closing and Transition (2 minutes)

- **Ask** youth to clean up the space and be sure to put all the materials into their designated areas.
- **Provide** youth with clear instructions for the transition to their next program area or activity.

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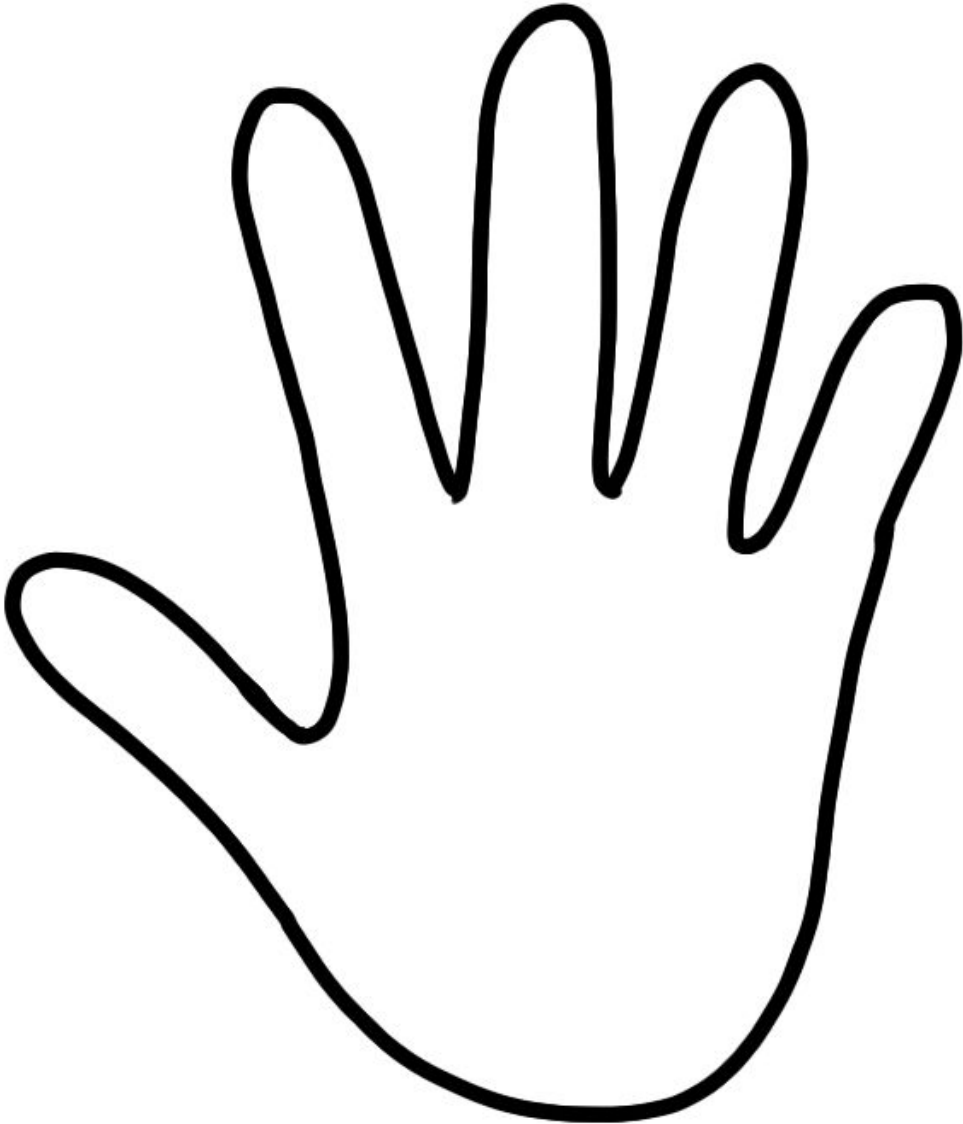
Session 2 Handout: Fingerprints Exercise



LOOP

WHORL

ARCH



**TIME**

60 minutes

**SIZE**

20-25

**HANDOUTS**

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Session 2: Collecting Fingerprints

Supplies Needed

- Clear tape
- Paper
- Pencils
- Cocoa powder
- Powdered sugar
- Chalk
- Bowls
- Small paintbrush for dusting fingerprints
- Magnifying glass

Links to Resources

- Fingerprint video: [youtube/DpoOU83HmFA](https://www.youtube.com/watch?v=DpoOU83HmFA) (Stop at 1:25)
- Methods for collecting fingerprints in activities below are outlined in these links:
 - › Pencil Print: handonheartjewellery.co.uk/taking-fingerprints-using-pencil
 - › Dusting Prints: mymommysplace.com/blog/2010/09/16/playing-detective-how-to-dust-for-fingerprints

Social-Emotional Skills

- Identifying and Solving Problems
- Planning and Carrying Out Investigations
- Evaluating

Session Objective: Children will learn about fingerprint patterns, ways to take fingerprints, and how to lift fingerprints from objects.

Warm Welcome (2 minutes)

Greet youth by name as they enter your program area, and engage in meaningful conversation.

Community Builder: Eye Spy (10 minutes)

- **Make** copies of the Eye Spy handout: Cut eyes apart, ensuring you have enough for each pair of children.
- **Write** the phrases “I Spy” and “Eye Spy” on flipchart paper.
- **Remind** children that we played I Spy yesterday when we were learning about using observation skills.
- **Say:** “Today we are going to change it up a bit and play Eye Spy. Let’s start by pairing up with a person whose eyes are a different color from yours. Find your partner!”
- Once youth are paired, **explain:** “Look around the room with your partner and find something that could use a pair of eyes on it.”
- **Distribute** a pair of matching eyes to each pair of children.
- **Instruct** children to use pieces of tape to attach the eyes onto whatever items they selected.
- Now **tell** them to name their “person.” For example, if they put eyes onto the trashcan, they might name it Terrence, as in, “Please go put the trash into Terrence.”
- **Ask** pairs to introduce their objects to the class.

Group Agreements Review (2 minutes)

Reference the Group Agreements in your program area to remind youth of their commitment to one another.

Main Activity: Collecting Fingerprints (30-40 minutes)**1****Preparation**

- **Make** copies of the Fingerprint Patterns handout, one per group of children.
- **Make** two signs – one that says True, and the other, False – and hang them on opposite ends of the room.
- **Set up** two stations, each with enough room for half of the participants.

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- At the Taking Fingerprints Station, **lay out** plain white paper, pencil and clear tape.
- For the Dusting for Fingerprints Station, **set out** bowls of cocoa powder and powdered sugar. Additionally, you can scrape off pieces of colored chalk if available.

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Introduce Youth to the Activity

- **Say:** “Today we are going to learn some facts about fingerprinting.”
- **Ask:** “First tell us, what are fingerprints?”
- **Listen** for responses, then explain fingerprints are patterns left on objects after someone touched them.
- **Ask** everyone to stand and move either to the True or False sides of the room, depending on their responses to your statements:
 - › “Fingerprints are made from layers of twisted skin.”
(True: These are called dermal ridges.)
 - › “Everyone’s fingerprints are unique.”
(True)
 - › “Identical twins have the same fingerprints.”
(False: No one has the same fingerprints.)
 - › “Fingerprint patterns are striped, dotted and swirled.”
(False: They are loop, arch and whirl.)
 - › “Fingerprint patterns stay the same your whole life.”
(True)
 - › “Fingerprints never change.”
(False: The patterns don’t change, but the skin can be permanently damaged or worn away, removing some layers of skin.)
 - › “Fingerprints are just for decoration.”
(False: Fingerprints help you hold onto things. Without these small ridges, things would fall from your hands.)
 - › “We leave fingerprints on items because of the oils in our skin.”
(True)
 - › “No animals have fingerprints like humans.”
(False: Animals like chimpanzees and gorillas have fingerprints like humans.)
 - › “Koala fingerprints are identical to human fingerprints.”
(True. This is very strange to scientists.)
 - › “Dogs don’t have unique fingerprints, but they do have unique paw prints.”
(False: But they do have nose prints that are completely unique. This is also true for cats and pigs.)

Academic Skills

- Critical Thinking
- Analyzing and Interpreting Information

Key Terms

- **Fingerprints:** The pattern left on an object when a person touches it
- **Collect:** To gather together; to collect fingerprints is to search for and then make copies of fingerprints from items in a crime scene
- **Identify:** To figure out who or what something is
- **Evaluate:** To consider something carefully and make a judgment about it
- **Examine:** To look carefully at someone or something, noticing details

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Step-by-Step Directions

- **Tell** children they will rotate between the two stations to learn more about fingerprints.
- **Divide** participants into two teams, **direct** each team to a station, and allow 15 minutes at each station to do the activity.

Taking Fingerprints Station

- **Tell** youth to make sure their fingers are clean and dry.
- **Instruct** them to use a pencil to scribble a square patch on the white paper, going over the same patch again and again.
- **Tell** them to each rub one of their fingers over the pencil mark; this will make a dark mark on their finger.
- Next **instruct** them to stick the sticky side of the tape on their fingers with the dark pencil on it; and then to gently pull the tape away.
- **Have** them stick the tape onto a white piece of paper.
- **Tell** youth to write down what fingers they took the prints from.
- **Have** children repeat the process using a few different fingers.
- **Tell** participants to notice the detail under the sticky tape, and to let you know once they are happy with the prints.
- **Tell** them they should evaluate the print to see if they can see patterns clearly in the print.
- **Instruct** youth to refer to the Fingerprint Patterns handout to identify whether they have whorl, swirl or loop fingerprints.
- **Ask** youth to use the magnifying glass for help in seeing detail.

Dusting for Fingerprints Station

- **Place** a small bowl of cocoa powder and a small bowl of powdered sugar in the center of the table. Additionally, you can scrape colored chalk and collect the chalk dust to use for dusting.
- **Tell** the children to find a fingerprint on a door, the windows, the television screen, desk, etc. If they can't find one, they can make one by pressing their own fingers on a flat, level surface.
- **Instruct** them to dip a dry paintbrush into the powder they created, and carefully dust it onto the fingerprint.
- **Oversee** to make sure there is enough dust on the prints.
- **Tell** participants to blow off any excess powder, and lay a piece of clear tape on the fingerprints.
- **Instruct** them to press the tape flat; then carefully peel it off.

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- **Encourage** them to try the different materials for dusting – powdered sugar, cocoa or chalk dust.
- **Ask** youth to clean up any excess powder, before moving to the other activity.

Reflection (5 minutes)

Ask the children:

- “What are the different types of fingerprints?”
- “Why would a crime scene investigator want to lift a fingerprint from a crime scene?”
- “If you found a fingerprint at a crime scene, what would you need to match the fingerprint with a person?” (Explain that law enforcement departments have a place on the internet where they can compare fingerprints to help them find a match.)

Recognition (5 minutes)

Recognize youth who were analyzing and interpreting information well.

Closing and Transition (2 minutes)

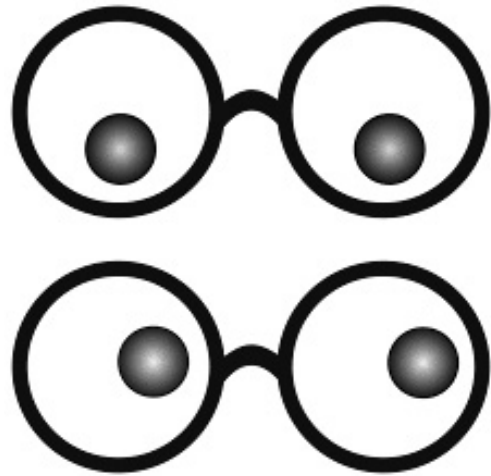
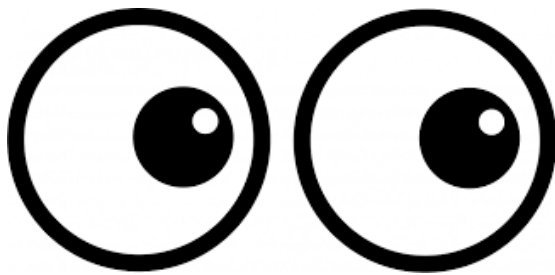
- **Ask** youth to clean up the space and be sure to put all the materials into their designated areas.
- **Provide** youth with clear instructions for the transition to their next program area or activity.

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Session 2 Handout: Eye Spy

Make copies of the eyes, cut them apart, and distribute to youth to attach on objects around the room. Alternatively, have youth create their own eyes.



Session 2 Handout: Fingerprint Patterns



Loops



Whorls



Arches

Right Hand:

Left Hand: