

**00:06 Speaker 1:** In this part, students make carbon prints of their skin texture and fingertips. They classify their fingerprints into the three basic patterns, whorl, arch, and loop. The focus question is, How are fingerprints alike and different? Here's what you'll need from the kit. For each group, one roll of transparent tape in dispenser, and two hand lenses. For the class, three fingerprint posters, Whorl, Arch, Loop, and one pad of self-stick notes, optional. You'll need to supply for each student, one Number 2 pencil. For each group, white scratch paper and moist paper towels. For the class, newspapers, optional, adhesive paper, optional, and one document camera, optional.

**00:55 S1:** Make copies of all notebook sheets, teacher masters, and assessment masters listed on the materials page for this part. Practice making a few carbon skin prints using scratch paper, a pencil, and tape. First, scribble a small area on the paper with the pencil. Second, rub the scribble mark on a part of your hand you want to print. Third, stick a piece of tape to the side of your palm, then gently pull the tape off. Last, stick the tape to a piece of white paper. A document camera can be used to project fingerprints for the class. Try this technique ahead of time to see if you want to use it. Plan how students will remove the pencil marks from their fingers. Putting a moist paper towel on the table for each group is one way to clean up. Students should also wash their hands with soap and warm water after the activity.

**01:50 S1:** To make a representational bar graph showing which basic fingerprint pattern is most common, prepare a graph on chart paper. Make three columns and label them, "W", "A", and "L". Copy Teacher Master fingerprint replicas on adhesive paper and cut the replicas apart. Have students stick the replica that corresponds to the pattern on their thumb in the appropriate column on the chart. Give the post test at least one day after the wrap-up review.

**02:21 S1:** This video is not intended to replace your FOSS investigations guide. The materials, preparation, and procedures may differ slightly from the edition that you are currently using. When in doubt, always follow the steps as written in your guide.

**02:45 S1:** To begin, ask students to run their fingers across the palm of their hands and to report how it feels. Tell students that even though their hands may feel smooth, they do have tiny high and low places. High and low places on a surface give it a texture. You will use a special technique to help you study skin texture. Demonstrate how to make a carbon print of an area on your hand using the technique you practiced, with scratch paper, pencil, and tape. Then show the result to the class. Tell them what you see is the pattern of the skin on your hand.

**03:24 S1:** Have the getters get tape, hand lenses, and scratch paper from the materials station. Make sure everyone has a Number 2 pencil. Let each student make one carbon print of their palm, and study the print with a hand lens. Ask students to report what they see in the carbon print of their hand. Suggest making a set of fingerprints using the same technique. Write or project the focus question and have students write it in their notebooks. How are fingerprints alike and different? Show the class a copy of notebook sheet Finger Patterns with the outline of a hand. Review the names of the fingers: Thumb, index, middle, ring, pinky. Tell students they can use the sheet to record the pattern from each finger on one hand.

**04:15 S1:** Have the getters get a Finger Patterns notebook sheet for each member of their group. Circulate among the groups as they make their prints. See the investigations guide for tips on helping students get clear prints. Have students wash their hands with soap and warm water after they make fingerprints. Next, ask students to describe and compare their fingerprints. They may

report that they see lines, dots, and patterns. Are any prints alike in some way? How would students group them? Tell students that fingerprint investigators have discovered that there are three basic patterns for most fingerprints: Whorl, arch, and loop. Post the three fingerprint posters and orient students to the features that will help with identification. Let students take a few minutes to study their five fingerprints and identify the basic pattern they find in each print. They should write whorl, arch, or loop, just above each print on their notebook sheets. Reinforce the fact that even though most fingerprints fall into one of the three basic patterns, no two prints in the world are exactly the same.

**05:29 S1:** Asks students to look at the thumb print on their Finger Patterns notebook sheets. Ask for a show of hands to see how many have whorl, arch, or loop patterns on their thumbs. Using one of the methods described in your investigations guide, make a representational or symbolic bar graph of class thumb prints. For example, on chart paper, make three columns for Whorls, Arches, and Loops, "W", "A", and "L". Have students stick on pictures from the Teacher Master Fingerprint Replicas. Review vocabulary from this part and have students answer the focus question in their notebooks.

**06:07 S1:** Have the getters return the tape and hand lenses to the materials station. Read the article "Fingerprints" using the strategy that is most effective for your class and discuss the reading using the questions at the end of the article. Then, read the short articles, "Super Twins". Ask students for their answers to the mystery posed in the article. Have them use the print pictures to support their answers.

**06:40 S1:** Review key vocabulary introduced throughout this investigation. Ask students to take a few minutes to locate all the focus questions for this investigation in their science notebooks, and review their answers. These are some of the big ideas that should come forward.

**06:57 S1:** A skeleton is a system of interacting bones and has several functions. The kinds and numbers of bones in an organism are inherited from the organism's parents. Muscles attach across joints, places where bones meet. Muscles contract when they work to move bones. Human fingerprints can be sorted into groups based on patterns. No two people have exactly the same fingerprints.

**07:34 S1:** Give the post test at least one day after the wrap-up review. Coding Guides and more information about self-assessment activities can be found in the assessment chapter. At the end of every FOSS investigation, you'll find interdisciplinary extensions. Prior to finishing this investigation, be sure to review these extension activities. Masters for the math extensions and the home school connections can be found in Teacher Resources and on Foss Web. For more information, including discussion questions, teaching notes, and English learner notes, plus additional strategies for science notebooks, language development, and assessment, please refer to your FOSS teacher toolkit.