Determine how a “Suspect’s” Print Was Made.

Investigators collect shoe prints from a crime scene to make comparisons with patterns on the sole of a suspect’s shoe. Shoe prints can also help determine the entrance or exit point at a crime scene, the direction of travel, or how the suspect was moving (running, limping, etc.). In other fields, trackers and biologists use animal footprints to learn where an animal has been to determine patterns of behavior.

You’ll Need:
- sand
- 1 large tarp covered with a layer of sand, a sand volleyball court, or natural sandy area (optional)

For each small group:
- 1 sturdy plastic container (at least 3 in. deep)
- 1 ruler or tape measure
- water
- 1 magnifying glass
- 1 towel for wiping off hands and feet
- paper and pencils

SMART START:
For each small group, fill a container halfway with slightly damp (not overly saturated) sand. Make sure groups have access to extra water in case the sand starts to dry out. Keep towels nearby for wiping sand off hands.

Pointer: The sand needs to be damp to see the impressions. Remind girls to smooth out the sand with the ruler each time so there is a clear area for the next impression!

Here’s how:
1. Observe. Break into small groups. Have each girl start the activity by pressing their thumb into the sand to make a simple impression. What shape is it? What characteristics differentiate the front and the back? Have girls sketch a diagram of the print and label distinct areas.

Remind the girls not to throw sand. It can easily cause injuries if it gets in the eyes.

2. Collect data. Ask the girls to brainstorm additional ways to make distinct impressions (e.g., press hard, press lightly, or press and turn), then create them in the sand. The girls should draw diagrams of each and note any differences from earlier prints.

3. Share. Discuss some of the patterns the groups found while looking at the impressions. What are some unique characteristics that helped distinguish the prints?

4. Mystery prints. Have each group set up a mock mystery crime scene and create a set of

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thumbprints in the sand. Deliver the SciGirls Challenge: Based on what you learned during your observations, can you determine how each suspect’s thumbprint was made? Allow girls to rotate and examine each group’s mystery crime scene. Then ask girls to share their results.

5. Continue exploring. Have girls make different shoe prints on a large sandy area. They might try running, walking, stomping, skipping, tiptoeing, and walking with a twist. Look for patterns and discuss. Then smooth the area and have groups take turns creating and analyzing a crime scene with shoe prints.

Be sure the girls keep their shoes on to avoid injury from sharp materials.

Watch Lindsey and the SciGirls process a crime scene on the SciGirls Investigate DVD. (Select Super Sleuths: Mentor Moment)

Mentor Moment
Lindsey Garfield received a bachelor’s degree in biology and immediately began her career in forensics. She is a crime scene investigator for the Minnesota Bureau of Criminal Apprehension, documenting and collecting physical evidence that helps explain what may have happened during the crime. Lindsey often testifies in court as an expert witness.

Standards Correlation

The activities in this book align to national education standards including: Standards for Technological Literacy, Next Generation Science Standards and the Common Core Standards for Mathematics. To download the complete and most current alignments, please visit scigirlsconnect.org.