

At the Scene of the Crime

Grade Level: 4, 5, 6, 7, 8

Duration: 40-50 mins

Classification: Classroom

Subject(s): Forensic Science, Biochemistry, Anatomy

Categories (STEM): Science

Keywords: Forensic Science, Thumbprints

Introduction

- Summary: Find out how the biology of fingerprints is used in criminal investigations!
- Description: Students will identify a person's thumbprint and isolate it using forensic sciences techniques at the scene of a crime.

Online Resource:

<https://www.connectionsacademy.com/resources/instructographics/fingerprinting>

Materials

Material	Quantity	Reusable?
Feathers	1 bag per 40 kids	Yes
Ink Pad	1 pad per 10 kids	Yes
Plastic Spoons	5 per classroom	Yes
Metal Spoon	1 per 5 kids	Yes
Scotch Tape	1 roll per classroom	No
Large Notecards	1 per 5 kids	No
Pens/Pencils	1 per 5 kids	Yes
Cornstarch	1 box per classroom	No
Black Construction Paper	1 per 5 kids	No
Fingerprint Sheets	1 per 5 kids	Yes
Small Dixie Cups	1 per 5 kids	Yes
Magnifying Glasses	1 per 5 kids	Yes

Directions

- Divide students into **groups of 4-5** and have every student make a thumbprint using their right hand and the ink pad on notecards. Label each thumbprint with the corresponding student's name underneath. This is the "suspect list".
- Discuss the fingerprint background worksheet.
- Pick a "criminal" in each group and have them place **ONLY ONE** thumbprint on a metal spoon. Rock thumb back and forth on the metal spoon to get a good print.

- Switch the metal spoon and “suspect list” with another group. **BE CAREFUL** not to make an additional thumbprint when passing the spoon to another group. Sometimes it is better to rotate groups than pass the materials.
- Use cornstarch (drop cornstarch on the metal spoon with a plastic spoon) and feather provided to isolate the thumbprint. Only use light soft strokes. **Drop cornstarch on the metal spoon over the black construction paper so it doesn’t spill everywhere.**
- Lift thumbprint using tape and tape to black construction paper to visualize.
- Discuss as a group whom to convict as the criminal and discuss.

Activity Extension

1. Calculate what percent of the class has each fingerprint characteristic (arch, loop, whorl).
2. Have students rotate more than one station to guess multiple “criminals”.

Discussion Questions

- What fingerprint types or characteristics do you or the criminal have?
- Which fingerprint types or characteristics are common? Which are not?
- What steps were taken to help visualize the thumbprint?
- Who would make a bad criminal? Who has arches?
- What other forensic evidence is used at the scene of a crime?
- What is a lie detector test? What does it measure?

What is happening?

- Students identify specific peers' thumbprints using enhanced visualization by powdering, lifting thumbprints, and setting them against a gradient. Students then discuss forensic evidence and how science may be used at a crime to convict criminals.

Applications:

Majors

- Forensic Science, Anthropology (bones & human remains)
- Entomology (insect science), Biochemistry, Genetics

Jobs

- Pathologist, Toxicologist (poison science), Forensic Anthropologist
- Police & Law Enforcement

Real-World applications

- Anatomy
- Lie detectors
- DNA analysis & isolation
- Cheek swabs



PROGRAM FOR WOMEN
IN SCIENCE AND ENGINEERING

This activity was last updated in fall 2020 by Student Role Models.