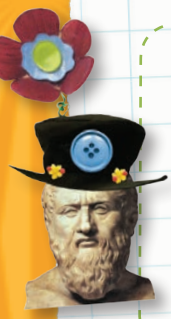
Activity 4

Super Sleuths

COLLECT, OBSERVE, AND CLASSIFY EVIDENCE TO IDENTIFY THE MOST LIKELY SUSPECT.

No matter how much someone tries to clean up after committing a crime, he or she will leave something behind and take something away from the scene. This idea is known as Locard's Exchange Principle and is why small amounts of material, known as trace evidence, is collected at a crime scene. In this activity, girls will collect trace evidence (glitter) and explore some of its class (or group) characteristics, such as color, size, shape, and light reflection.



SMART START:

Set up four to six stations, each containing a shallow dish with a small sample of glitter. Label one station as the crime scene, and the rest with suspects' names. Make sure that one of the suspect glitter samples matches the crime scene glitter!

You'll Need:

- 4-6 shallow containers (one for each suspect and the unknown glitter evidence)
- 3-5 different types of glitter (Purchase the same color glitter in different shapes and sizes from a local craft store. SciGirls recommends Tulip Fashion Glitter in silver fine jewel, silver fine hologram and silver medium hologram and Creatology Glitter in sterling and silver.)

For each small group

- 3 magnifying glasses
- lamp or other bright light source
- 1 pair of tweezers
- 1 pad of sticky notes
- paper and pencil
- 4-6 notecards (3 in x 5 in, unlined)
- 4-6 paper envelopes (one for each type of glitter)
- transparent tape
- 1 single hole punch
- light microscope (optional)

Here's how:

1. Identify the problem. A crime has been committed! Glitter was collected as unknown trace evidence at the scene of the crime. After questioning, glitter samples were found on several suspects.[2] Deliver the **SciGirls Challenge:** Collect, observe and classify the trace evidence to identify the most likely suspect.

2. Collect evidence. Ask girls how they might collect glitter evidence from each suspect using the materials provided.[3] Have each group[1] move through the stations collecting glitter and placing the evidence in a labeled envelope. (One way is to use a sticky note, placing the sticky area on the glitter to pick it up.)

To see how SciGirls collect evidence, watch the *SciGirls Investigate DVD*. (Select Super Sleuths: Collect Evidence.)

Super Sleuths continued

3. Prepare slides. Punch a hole in an index card and place a piece of tape on the back of the hole. If the girls used sticky notes to collect evidence, press the glitter end onto the tape and gently pull the sticky note off. Some of the glitter will remain on the tape. Repeat a few times if necessary. Then seal with another piece of clear tape and label.

4. Observe and collect data. Determine which glitter sample has the same class characteristics as the unknown sample. Examine the known and unknown glitter samples with a magnifying glass, noting color, shape, size and any other distinguishing features of the glitter. Girls should record their observations in a table.

POINTER: Make sure the work area is brightly lit, since one of the characteristics of glitter is how it reflects light. It helps to place a sheet of white paper behind the slide if girls are having trouble seeing it. If you have one available, use a microscope to make comparisons.

Watch SciGirls analyze evidence on the *SciGirls Investigate* DVD. (Select Super Sleuths: Analyze.)

5. Draw conclusions. Each small group should come to conclusions about which known glitter is consistent with the unknown glitter. Make sure the girls support their observations and conclusions with solid evidence. [6]

6. Share. Have each small group share their findings. Ask the girls if their investigation indicates that the suspect is guilty. Why or why not? What other evidence would they need to be certain?

Mentor Moment

Sarah Walbridge-Jones is a forensic scientist who analyzes trace evidence (hair, soil, fibers, paint flecks, etc.) to help solve crimes. Working in a lab, she uses high-tech instruments such as scanning electron microscopes to examine these small particles. Sarah also likes to share her knowledge of forensics as a professor and guest lecturer at colleges around Minnesota.

Supported by: NSF, FIGS FOR GIRLS IN SCIENCE L'OREAL USA, NORTHROP GRUMMAN Foundation, & PPG Industries Foundation

[1-7] See **SciGirls Seven** strategies on page 3.