FIBER COLLECTION

QUICK PEEK

In this lesson, students work in groups to learn more about forensic science as they collect and analyze fibers.

SUGGESTED GRADE LEVELS: 3–6

ILLINOIS STATE LEARNING GOALS

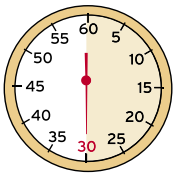
SCIENCE
11.A, 12.A,
13.A, 13.B

MATH
10:A, 10.B

LANGUAGE ARTS
3.C, 4.A, 4.B, 5.A

OBJECTIVES

- ★ Students will work in groups to collect fibers using methods similar to those of forensic scientists.
- ★ Students will make observations and accurately record data in a table.



PACE YOURSELF:
30 MINUTES

PREPARE YOURSELF

Divide students into small groups.

Make copies of observation sheet.

MATERIALS

Per Group:

- ☐ Small resealable bags
- ☐ Forceps or tweezers
- ☐ Scissors
- ☐ Clear tape
- ☐ Hand lenses/microscopes
- ☐ Observation sheet

WHAT YOU NEED TO KNOW...

We leave behind evidence everywhere we go. This can range from fingerprints to small pieces of clothing or strands of hair. The small pieces of evidence that are left behind at a crime scene are called trace evidence. Forensic scientists analyze trace evidence to determine who has been at the scene of a crime.

WARM UP!

1. Ask students to define **forensic science**. Discuss that forensic science is the application of many sciences to answer questions of interest to the legal system.
2. Ask students what type of evidence forensic scientists analyze. (Possible answers: blood, DNA, fingerprints, fibers.)
3. Ask students what **fibers** are. Where can they be found? (Possible answers: clothing, carpet, towels.)
4. Why is it important for forensic scientists to use gloves or forceps? (Talk about contamination of evidence.)
5. Why do forensic scientists need to label all of their evidence? (Discuss having multiple pieces of evidence and needing to organize evidence.)

Man-made fibers include: rayon, acetate, nylon, polyester, acrylic, and spandex.

THE HOW TO:

1. Working in small groups, have students use the forceps and scissors to collect a variety of fiber samples from articles of clothing, carpets, etc. Make sure to tell students how important it is not to contaminate evidence.
2. Place each fiber type into a separate bag.
3. Tape a sample of each fiber to the observation sheet in the *Fiber Sample* column and record each fiber's source in the *Collected From* column.
4. Examine the samples using a hand lens or microscope. Fill in the *Color* column for each sample.
5. Ask each group to brainstorm three characteristics they can use to differentiate between the fiber samples.
6. Label the remaining columns with these three characteristics and ask students to record their observations about the different fibers.

Fibers can be divided into two large groups: natural and man-made. The earliest people wore animal skins and furs for clothing.

WHAT'S GOING ON HERE?

Different types of fibers will have different observable characteristics and can be useful in forensic investigations. However, for fiber evidence to be useful in a crime scene investigation, scientists must be able to narrow down its origin to one or two sources. Because most clothing, upholstery, and carpet are mass-produced, this is sometimes difficult to do.

DID THEY GET IT?

Forensic scientists differentiate between types of fibers (i.e. color, synthetic vs. natural fibers). How can this information be used by forensic scientists? What is one issue with using fibers to place a suspect at a crime? (Possible answer: many people wear similar clothing or uniforms.)

ET CETERA

1. Discuss possible careers in forensic science.

   The following websites have great information about pursuing a career in forensic science:
   http://www.aafs.org/?section_id=resources&page_id=choosing_a_career
   http://www.forensicdna.com/careers.htm

2. Add one of these cool books to your classroom library, or choose one for Read Aloud:

   Criminal Investigation, Woodford, Chris; Austin, TX : Raintree Steck-Vaughn, 2001, Ages 9-12

   Forgeries, Fingerprints, and Forensics: Crime, Parker, Janice; Austin, Tex. : Raintree Steck-Vaughn, 2000, Ages 9-12

   Forensic Science, Pentland, Peter.; Stoyles, Pennie; Philadelphia : Chelsea House Publishers, 2002, Ages 9-12

Wool, silk, cotton, flax, and the husks of some dry fruits are examples of natural fibers.

FIBER COLLECTION AND ANALYSIS

FIBER SAMPLE	COLLECTED FROM	COLOR			