

a WOW Lab

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Classroom Science Investigation

Student Handout

In the following handout, students will be required to:

- Sketch or take notes about their observations
- Use their observations to make conclusions about the identity of the thief

This document provides the final report answer sheet (page 2) and a blank handout (pages 3-12). Sample answers to the handout can be found in the *Activity Instructions*. The blank handout should be made available to each group prior to the activity.

FORENSICS: FINAL REPORT

Where was everyone sitting at the table?

Fingerprint Analysis				
	Suspect A	Suspect B	Suspect C	Teacher
Position at table	2	4	1	3

What kind of cookie did each person eat?

Cookie Analysis				
	Suspect A	Suspect B	Suspect C	Teacher
Type of cookie	dried fruit	sugar cookie	Oreo & pink wafer	pink wafer

Circle the suspect whose pen was used to write the note.

Suspect A Suspect B **Suspect C** Teacher

Circle the suspect who left a fibre on the teacher's chair.

Suspect A Suspect B **Suspect C** Teacher

Circle the suspect who left their footprint at the crime scene.

Suspect A **Suspect B** Suspect C Teacher

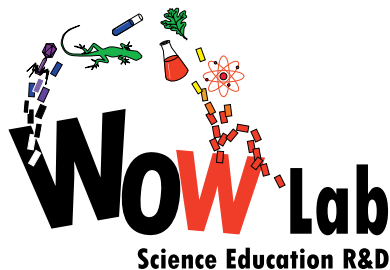
Circle the suspect who left their teeth marks on the teacher's cup.

Suspect A Suspect B **Suspect C** Teacher

After analyzing all of the evidence, use the results of the above report to answer the following question:

Who ate the teacher's cookie and drank the teacher's juice?

It appears that Suspect C ate the cookie and drank the juice.



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Scenario

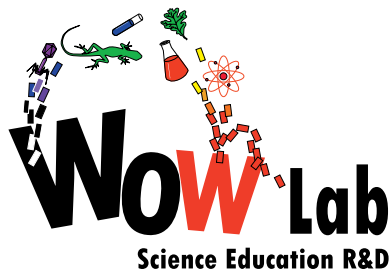
Your teacher was having juice and cookies with three other teachers. Each teacher was eating a different kind of cookie, but they were all drinking the same kind of juice. When they were almost finished, your teacher had to leave behind his/her last cookie and a full glass of juice because he/she had been called to the main office. When your teacher returned to enjoy the leftover snack, the cookie was gone, there was no more juice and the three other teachers had disappeared.

You are Crime Scene Investigators that have just arrived at the scene of the crime. There are a couple of details that you should know before you begin the investigation:

- The three teachers that disappeared are now suspects labelled Suspect A, Suspect B and Suspect C.
- There were cookie crumbs left at each of the teachers' spots.
- A footprint was found near the table.
- Fingerprints were found on each of the teachers' cups.
- A bite mark was left on your teacher's cup.
- A fibre was found on your teacher's chair.
- There was a note found at the crime scene.

Each investigator should have a *Student Handout*, a pencil and a ruler. Your investigative team will analyze the evidence at different stations and use the results to answer the following question:

Who ate the teacher's cookie and drank the teacher's drink?



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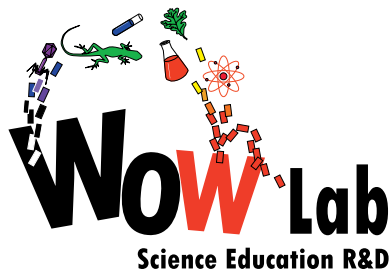
Station I - Crime Scene

Before you enter the crime scene, remember that investigation requires great attention to detail. Be prepared to sketch or take notes about everything that you encounter. Any object found at the scene of the crime needs to be analyzed and used as evidence, so write down what you see in the following tables.

Position at table	Cookie observations	Fingerprint observations
1		
2		
3		
4		

A footprint was found at the scene of the crime. Look at the footprint and write down your observations, perhaps including a sketch of the print. You might want to use a ruler to take measurements, but be careful not to touch or smudge the print. When investigating a crime scene, it is very important to keep the evidence exactly as you found it.

Footprint Observations and Sketch



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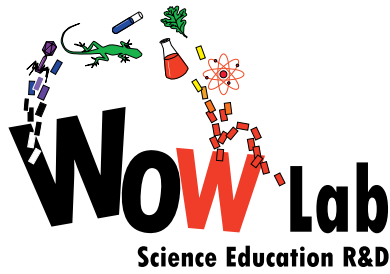
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Station II - Fibre Analysis

After carefully inspecting the crime scene, an unknown fibre was found on the teacher's chair. The unknown fibre was taped to an index card and taken to the laboratory for inspection. As highly qualified laboratory technicians, it is your job determine whose clothing the fibre came from. A piece of material from each of the teachers' clothes is provided on the cue cards for you to compare to the unknown fibre. Use the magnifying glass to analyze the evidence. You can use the tweezers to remove a fibre from the piece of fabric.

	Colour	Length	Thickness	Texture
Unknown fibre from crime scene				
Teacher				
Suspect A				
Suspect B				
Suspect C				

Which suspect's clothes did the fibre come from? Explain your choice.



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Station III - Fingerprint Analysis

Before entering the fingerprint analysis laboratory, your fingerprint needs to be taken. Write your name on the solid line in the table. To take your fingerprint, roll your right thumb from left to right on the ink pad provided, then press your thumb lightly on the ink print square in the table. Wipe your hands on paper towel. You are now allowed to enter the laboratory.

	Ink print	Description
<hr/> (write name above)		

Carefully look at the index cards that have the suspects' fingerprints on them. Determine if the print is an arch, a loop, a whorl or a reverse loop. Write down any additional information that you think is important in the description column of the table on the next page.





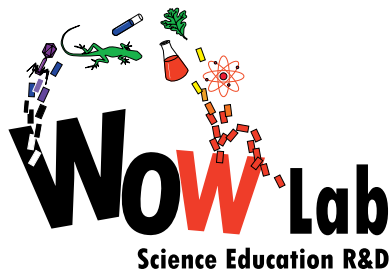
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Now look at the information collected at the crime scene and determine which fingerprints look similar. Write down the cup number that matches the fingerprint cue card in the right hand column. You now know the position of each person at the table.

Individual	Draw print	Description	Cup match
Suspect A			
Suspect B			
Suspect C			
Teacher			



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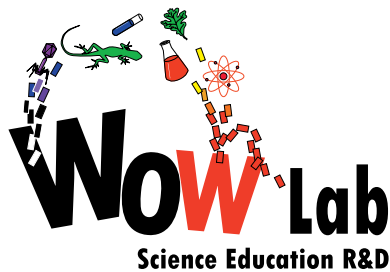
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Station IV - Footprint Analysis

The suspects' shoes have been collected and are available for analysis at the footprint lab station. Make prints of the bottoms of these shoes by placing them in the tray of paint and then onto a piece of paper. Compare the prints that you make at the lab station with your observations and sketch of the print left at the crime scene.

Suspect	Draw Pattern	Description
Suspect A		
Suspect B		
Suspect C		
Teacher		

Who do you think left the footprint? Why?



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Station V - Dental Analysis

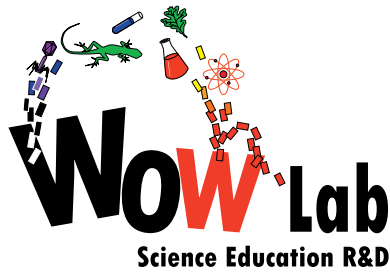
Someone drank the teacher's juice and a bite mark has been found on the cup. Carefully look at the marks left by the top teeth and write down your observations.

Draw bite mark	Number of teeth	Straight or crooked	Large or small	Spacing or no spacing	Curve of teeth	Additional details

Molds have been made of the four suspects' teeth. Use each mold to make bite marks on another styrofoam cup. Compare the bite marks made using the molds with the bite marks in the cup found at the crime scene.

Suspect	Number of teeth	Straight or crooked	Large or small	Spacing or no spacing	Curve of teeth	Additional details
A						
B						
C						
Teacher						

Write down which suspect's teeth match the bite marks found on the cup.



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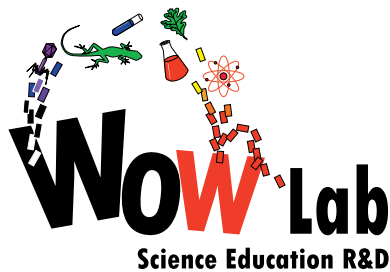
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Station VI - Cookie Analysis

At this station, you will determine who ate what kind of cookie. Take a cookie and put it in a plastic bag. Crush the cookie and analyze the crumbs. Write down the cookie type in the left hand column and fill in the middle column with descriptive terms. Compare the results below with the descriptions from the crime scene and then match up the descriptions to determine the position of each cookie at the table. Once you have completed the fingerprint analysis and determined who was sitting where, write down who you think ate which cookie in the right hand column.

Cookie type	Cookie crumb description	Position at table	Individual



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Station VII - Ink Chromatography Analysis

Glue both pieces of filter paper from the activity into the table below. Compare the patterns of the ink separation and answer the questions below.

Suspect A	Suspect B	Suspect C	Teacher	Crime Scene Evidence

Who do you think left the note? Why?

FORENSICS: FINAL REPORT

Where was everyone sitting at the table?

Fingerprint Analysis				
	Suspect A	Suspect B	Suspect C	Teacher
Position at table				

What kind of cookie did each person eat?

Cookie Analysis				
	Suspect A	Suspect B	Suspect C	Teacher
Type of cookie				

Circle the individual whose pen was used to write the note.

Suspect A Suspect B Suspect C Teacher

Circle the individual who left a fibre on the teacher's chair.

Suspect A Suspect B Suspect C Teacher

Circle the individual who left their footprint at the crime scene.

Suspect A Suspect B Suspect C Teacher

Circle the individual who left their teeth marks on the teacher's cup.

Suspect A Suspect B Suspect C Teacher

After analyzing all of the evidence, use the results of the above report to answer the following question:

Who ate the teacher's cookie and drank the teacher's juice?