



BLACK ROCK DESERT  
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NATIONAL CONSERVATION AREA

## LASSEN-CLAPPER MURDER SITE

### Dental Forensics: The Case of the Missing Chocolate



**Grade Level:** Elementary

**Purpose:** This lesson provides students with the opportunity to learn more about the field of forensics, the field of science used in the Lassen/Clapper murder mystery.

**Objective:** The student will be able to define the term forensic science. The student will be able to follow directions to make a set of teeth impressions. The student will compare teeth impressions with teeth markings on a piece of chocolate to make an educated guess as to who ate the chocolate.

**Nevada State Standards:**

**The Nature and History of Science Content Standard 18.0: Scientific, Historical, and Technological Perspectives**—Students understand that science is a unique way of knowing about things. Many men and women have contributed to the traditions of science. The ability to pursue activities and careers in science is accessible to people from all cultures and abilities.

**Scientific Inquiry: Processes and Skills Content Standard 21.0: Scientific Values and Attitudes**—Students understand that science is an active process of systematically examining the natural world.

**Materials:**

- ◆ Scissors.
- ◆ Styrofoam plates (1 per group).
- ◆ Marking pens.
- ◆ Chocolate (as a healthier alternative, thick cheese can be substituted).

**Prior to the Lesson:** Students will need to be divided into groups of four. Do this ahead of time so that you may select one student from each group to be the “guilty culprit” (The other students should not see this, the culprits’ identities should remain a secret!) The guilty culprits will take a bite out of a piece of chocolate. Number each piece of chocolate so that it goes to the group that the corresponding guilty culprit is in. Later in the lesson, the group will analyze the teeth markings to determine who did the crime.



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**Anticipatory Set:** Write the words “forensic science” on the board and ask students if they know what it means or if they ever heard of it. Tell students that forensic science is the study of objects that relate to a crime. For example, if a window is broken and one object that is found at the scene of a crime is a baseball bat, what do we call the object? (Evidence) Forensic scientists analyze the evidence that is found at a crime. They are special scientists that solve crimes. Ask students to name some skills that would be used by forensic scientists. Write these on the board. Some possible answers include: observing, classifying, comparing, using numbers, measuring, predicting, interpreting data, and drawing inferences. Ask students if they would like to be forensic scientists for a day?

**Developing the Lesson:** One type of forensic scientist is a forensic dentist. What do you think they study? (Teeth!) Forensic dentists assist in crime solving by studying teeth and teeth impressions. What is a teeth impression? What do you think could be learned by studying teeth and teeth impressions? Dental records are often used to identify people. Because teeth are one of the hardest substances in the human body, they are frequently well preserved. Dental x-rays or records showing fillings, position of teeth, etc. can help forensic dentists find a match of teeth to the individual. Eighty percent of the time teeth impressions are used to identify unknown victims.

In the case of the Lassen/Clapper mystery, how would the forensic dentists have used teeth to identify the victims? What if there weren't any dental records to match the teeth with the person, what else could scientists have learned by studying teeth? By studying molar teeth and amount of decay, an estimate of the victim's age can be determined.

Tell students that you had brought in some chocolate as a treat for the class today but it looks like somebody ate some! As forensic dentists, you are hoping that they will be able to solve the Case of the Missing Chocolate! Divide students into groups of four and pass out styrofoam plates. Give each group a copy of “Making Teeth Impressions” (below) so that they may begin making their teeth impressions (you may need to model this beforehand). After students are finished, have students study the impressions to write the answers to the following questions:

1. How many teeth are in the top and bottom impressions?
2. What other characteristics of the impressions do you notice?
3. Compare the top teeth impressions to the bottom. How are they the same?  
How are they different?
4. Are there any missing teeth, spaces, chips, etc.?



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Now, tell students that you just received a hot tip: one person in each group is guilty of stealing a bite of chocolate, and you have the evidence to prove it! Pass out the “evidence” and have groups work together to see if they can identify the individual who took the bite by comparing the impressions with the bite in the chocolate. (The guilty culprits should play along with the investigation; he/she should not reveal his/her identity!) Allow students time, about 15 minutes, to solve the mystery. Refer students to the list on the board to remind them of the skills they need to use. When time is up, have groups present their evidence and state who their suspect is. At this time, the guilty culprit will reveal his or her identity to confirm or disprove the groups’ verdict.

**Closure:** Review what a forensic scientist is and what one does. Ask students what skills they had to use to be a forensic dentist. Ask students if they enjoyed being forensic dentists. Ask if anyone would like to be a forensic scientist someday.

**Evaluation:** Assess students’ knowledge of forensic science by their ability to participate in the group discussion and answer the above questions. Informally assess students by observing their abilities to work well within a group and contribute meaningfully to the group effort.