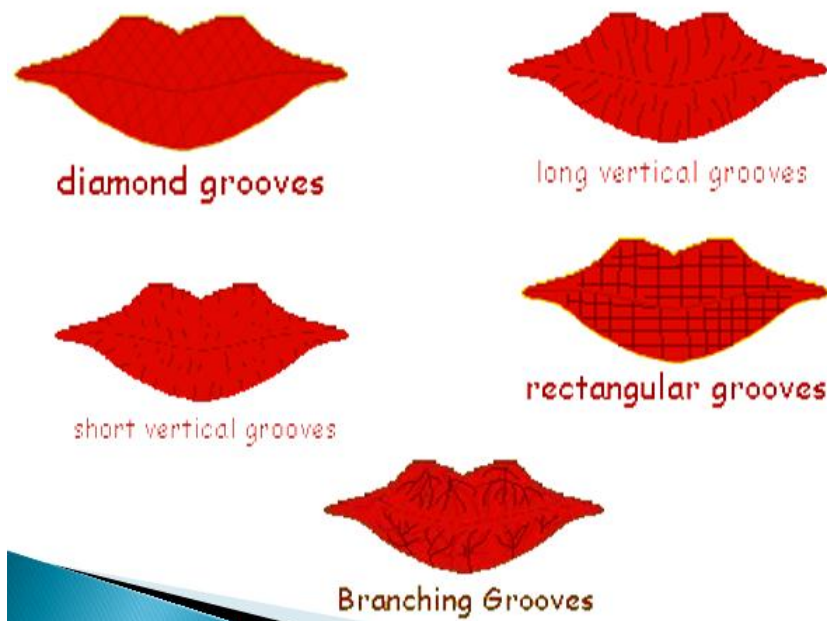# Who's Been Drinking From This Cup?

<u>Introduction</u>

The surface of the lips is covered with grooves that leave prints on objects with which they come into contact. You may have seen such prints on drinking glasses used by women wearing lipstick. These grooves make patterns such as branching lines, diamonds, rectangles, and long and short vertical lines (see diagram 1 *'below);* actual prints are a mixture of these patterns. Forensic scientists have used lip prints found on a glass at a crime scene to identify an intruder who has taken- a drink at the crime scene. They also use lip prints to identify Peeping Toms, who leave lip prints on windows as they gaze through them. In this experiment, you will make two copies of your lip prints. You will identify the patterns on one copy, and then look at the collection of lip prints made by your group. Next, you will make a lip print on a numbered plastic cup and hand the cup to your teacher, who will hand you a cup marked by one of your fellow students. You will identify this student by matching the lip print on the cup with the prints in the collection.

Diagram 1

<u>Materials</u>
- new brightly colored lipstick
- 2 sheets of plain white paper (at least 10 X 10 cm) for each member of the group
- one thumb tack-for each member of the group
- paper towel
- pen or pencil
- bulletin board large enough to display prints made by all members of the group
- access to a mirror
- plain white plastic or paper cup for each member of the group
- all-purpose white glue
- antibacterial soap

The teacher should number each cup on its base and record the number of the cup handed to each member of the group.

Safety note
To avoid spreading bacteria between the members of the group using the same lipstick, rub a clean finger on the surface of the lipstick and then rub your lips with the lipstlck-covered finger. If you need to re-apply the lipstick, either wash the finger or use a different finger.

Procedure
This experiment requires a group of 5 -10 students. Before the experiment, the teacher should give the numbered cups to the students.
1. Wash your hands with antibacterial soap and then rub one finger lightly over the surface of the lipstick.
2. Rub the lipstick-covered finger over the surface of your lips, until your lips are well covered and shiny with lipstick. Remove the lipstick from your finger using a paper towel.
3. Place the piece of paper on a flat surface and press your lips firmly on the center of the paper. If you move your lips while recording this lip print you will make a blurred impression. If this happens, you should repeat steps 1 to 3 using a clean sheet of paper.
4. Label your lip print with your name and pin it to the board.
5. Repeat steps 1 to 3 to make a second print. Glue this in the data table on the next page.
6. Repeat step 1 and then rub the lipstick-covered finger over the surface of your lower lip. Remove the lipstick from your finger using a paper towel.
7. Take your numbered cup and press your lower lip firmly on the edge of the cup (as if drinking from it). If you move your lip while recording this lip print you will make a blurred impression. If this happens, you should repeat steps 6 and 7 using a different part of the cup.
8. Clean your lips using a paper towel. Check in the mirror that you have removed all traces of lipstick.
9. Hand the cup you have marked to your teacher.
10. Study the copy of your lip prints in the data table. Use diagram 1 on page 1 to help you label the patterns you see.
11. Study the lip prints made by other members of the group that are pinned on the board.
12. The teacher hands out a cup to each member of the group making sure that the recipient is not the person who made the lip print on it. Using the collection of prints on the board, identify the print made on the cup you have been given.

Analysis
1. Sketch your assigned lip prints and identify various features

2. Could you identify patterns on your lip print? Give 4-6 unique differences

3. Why is possible to identify who had made the print on the cup you were given?