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PHOTOCOPY MASTERS

Forensic Science

By Fiona Rayns

For ages 10+

Written by Fiona Rayns. Illustrated by Murray Smoker. Typesetting and design by Shay Howard.

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Activity I.D. #00004

Hands Up!

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Name: Date: ❑Tick if forensic evidence is attached

A Dactylographer is a fingerprint expert

- **About three months before you were born, tiny ridges started to form on your fingers and toes. No matter how old you get, these lines will not go away and their patterns will never change.**
- **Your skin produces sweat and oil. When you touch something, small amounts of these substances get left behind in the pattern of the ridges, making a finger print.**
- **Because fingerprints are unique, they can be very useful in solving crimes. Using fingerprints to identify individuals is called *dactylography* (dac-ty-log-ra-phy).**

Forensic scientists have over 40 different ways of detecting fingerprints left at a crime scene. On hard surfaces, e.g. metal or glass, they often use a dusting powder, while on plastic or aluminium or wood, a fuming method is often used (your teacher may demonstrate this later). On soft surfaces such as paper, special chemicals such as *ninhydrin* react with the prints to form a purplish stain, while lasers make prints fluoresce (glow) and can be used on very delicate surfaces.

Once the prints have been made visible they can be preserved as evidence. This involves taking photos of them, carefully storing the item with the prints on, or using sticky tape and powder to "lift" the print, which can then be kept.

The prints can then be compared with those held on police records or those taken from suspects.
Sometimes they are matched by eye but more often this is now done by computer.

There are three basic type of fingerprint pattern:

- **The loop**
- **The whorl**
- **The arch**

A fourth kind of print is made up of two or more of these types. This is known as a composite print and is not as common.

The loop

The whorl

The arch

Dust this page for prints! →

❍ Related Outcome: Students identify what type of finger prints they have.

Forensic Science
Activity I.D. #00007

Puzzling Powders

B

Identify Yourself ❑Mad Scientist ❑Lab Girl ❑Lab Guy ❑Lab Rat ❑Super Sleuth ❑Corpse Specialist ❑Good looking Investigator ❑The Cool Detective ❑Suspect

Name: Date: ❑Tick if forensic evidence is attached

Results Table

Record your results from the experiment on Page 13 in the table below.

	Looks like …	Feels like …	Smells like …	Reaction with water	Reaction with vinegar	Reaction with iodine
Baking soda						
Sugar						
Talc						
Cornflour						

Mystery Substance

Your teacher will give you a sample of a mystery substance. Use your forensic skills to identify what it is.

	Looks like …	Feels like …	Smells like …	Reaction with water	Reaction with vinegar	Reaction with iodine
Mystery Substance						

My test results indicate that the mystery substance is _____

Signed _____ (trainee forensic chemist) **Date:** _____

Extra for Experts

Today you examined four white powders. Make a list of some of the other white powders that are commonly found around your house.

_____

_____

_____

_____

❍ Related Outcome: Students carry out a series of experiments to identify a mystery powder.

Guess Who? 4

Identify Yourself ❑Mad Scientist ❑Lab Girl ❑Lab Guy ❑Lab Rat ❑Super Sleuth ❑Corpse Specialist ❑Good looking Investigator ❑The Cool Detective ❑Suspect

Name: Date: ❑Tick if forensic evidence is attached

Forensic artists can help find and convict criminals, locate missing people and discover the identity of unknown bodies. They do this by producing sketches, computer images and even sculptures. Forensic artists work in four main areas – some artists may work in a number of areas while others specialise in just one.

Image modification:

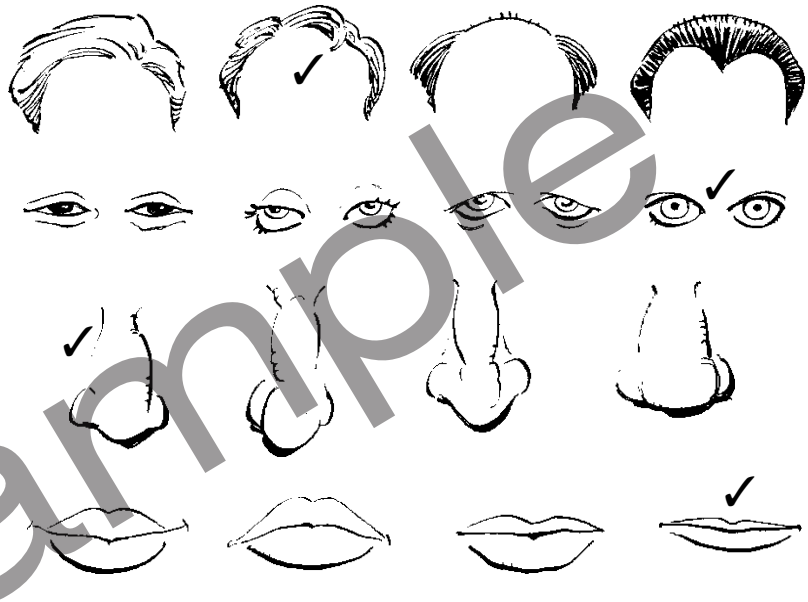
The artist alters an image to show how a person may look as they get older or change weight. The artist may show how someone may try to disguise themselves by changing either their hair colour, wearing glasses or by undergoing plastic surgery.

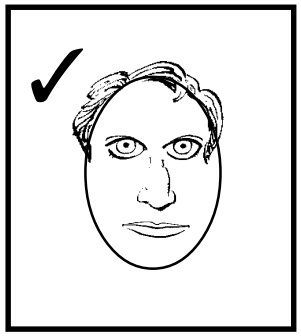
Court evidence:

The artist provides a drawing, for example, of a murder scene which can then be shown in a court case.

Composite drawings:

A victim or witness to a crime looks at a series of photographs showing different parts of the head, face and hair and is asked to select the images that look like those of the suspect. The artist then puts these parts together to produce a likeness based on the description.





Identification after death:

The artist's skills are used to identify a person after they have died (post-mortem) or from their skeletal remains. Items discovered with the remains and information from other specialists, such as anthropologists, may provide clues about the person's original appearance. Skeletons are sometimes identified by superimposing a photo of the person over a photo of the skull to see if it matches.

❍ Related Outcome: Students learn about the role of a forensic artist and make their own sketches based on a description provided by the teacher.

Forensic Science
Activity I.D. #00018

Read My Lips

Identify Yourself ❑Mad Scientist ❑Lab Girl ❑Lab Guy ❑Lab Rat ❑Super Sleuth ❑Corpse Specialist ❑Good looking Investigator ❑The Cool Detective ❑Suspect

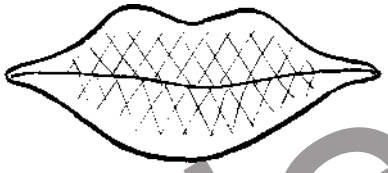
Name: Date: ❑Tick if forensic evidence is attached

- **One of the first things investigators often look for at a crime scene are prints. They may discover fingerprints on various objects, footprints in the soil and even sets of tyre prints. One type of print however, that isn't commonly heard about but which may also be found is the lip print. These prints can be left behind on drinking glasses and cups.**
- **The study of lip prints is called *cheiloscopy*.**
- **Like your fingerprints, your lips are covered with fine lines and grooves. Also, like fingerprints, no two lip prints are exactly the same so a lip print can be used to help identify an individual.**
- **The object with print on can be taken to a laboratory to be looked at or the print can be lifted. To lift the print, the investigator spreads talcum powder over it with a soft brush. Then the print is photographed. Next, a piece of clear plastic tape may be placed over the print and then peeled away, taking the print with it. This print can then be compared with those taken from suspects.**

Like fingerprints, lip prints can be grouped according to the patterns they create. Many people's lips have parts of at least two patterns.

Here are the five most common patterns:

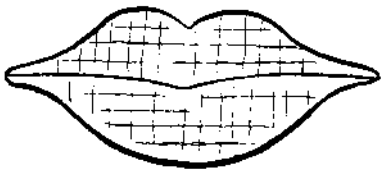
Short vertical grooves



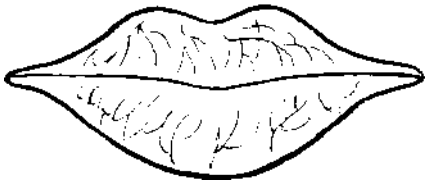
Long vertical grooves

Rectangular grooves that may crisscross

Grooves that form diamond patterns



Branching grooves like those in a plant root



❍ Related Outcome: Students take and identify different types of lip print.