


# Latent Prints

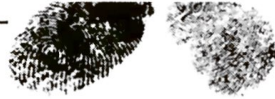
Forensic Science



T Trimpe 2007 <http://sciencespot.net>

## 1. Visible or Patent Print

- **Visible or Patent:** Left by the transfer of \_\_\_\_\_, \_\_\_\_\_ or another \_\_\_\_\_ or \_\_\_\_\_ onto a surface that is smooth enough to hold the print; evident to the \_\_\_\_\_



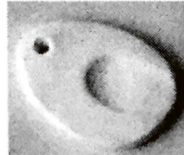
A crime lab can use fingerprints to identify the \_\_\_\_\_ or identify or rule out a \_\_\_\_\_. There are several types of prints a CSI might find at a crime scene:

**TYPES OF FINGERPRINTS found by investigators at the C. S.**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

## 2. Plastic Fingerprints

- These prints are actual \_\_\_\_\_ left in some \_\_\_\_\_ such as \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_.




Notes Part 3  
Unit 5 Fingerprints

#10

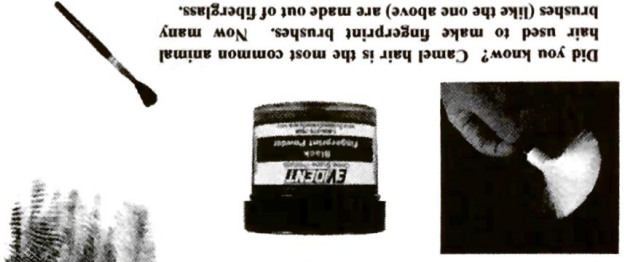
### 3. Latent Fingerprints

- Sometimes called \_\_\_\_\_, are caused by the transfer of \_\_\_\_\_ and \_\_\_\_\_ onto a surface.
- They can be made visible by \_\_\_\_\_ with powders or making the fingerprints in \_\_\_\_\_ some way more visible by using a \_\_\_\_\_.



\_\_\_\_\_ are impressions left by friction ridge skin on a surface, such as a tool handle, glass, door, etc.

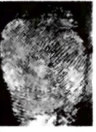
Prints may be collected by revealing them with a dusting of **black powder** and then lifted with a piece of \_\_\_\_\_




Did you know? Camel hair is the most common animal hair used to make fingerprint brushes. Now many brushes (like the one above) are made out of fiberglass.

Some \_\_\_\_\_ investigators use \_\_\_\_\_ powder and UV lights to help them find latent prints on multi-colored or dark surfaces.


The \_\_\_\_\_ fuming method (often called the super glue method) is a procedure that is used to develop latent fingerprints on a variety of objects.



\_\_\_\_\_ is a chemical that bonds with the amino acids in fingerprints and will produce a blue or purple color. It is used to lift prints from surfaces such as \_\_\_\_\_ and \_\_\_\_\_.



\_\_\_\_\_ lodine: a purple crystal that will sublime into a gas and combine with carbohydrates in latent prints. Will produce a brownish print that will fade quickly unless sprayed with a starch solution. It is used to lift prints off \_\_\_\_\_ or \_\_\_\_\_.



\_\_\_\_\_ Objects can be dipped or sprayed with a silver nitrate solution. The chlorides from salt in perspiration on the print will combine with silver nitrate and produce a black or red print that can be viewed under UV light. Is used to lift prints from \_\_\_\_\_ surfaces.

## Fingerprint Evidence

- *How are latent fingerprints collected of odd surfaces? SUMMARY*

Chemical	Uses	Application	Latent Print
Ninhydrin			
Cyanoacrylate vapor			
Silver Nitrate			
Iodine Fuming			

## The Future of Fingerprinting

- New scanning technologies
  - Yield detail in minute patterns
  - Reduce analytical mistakes
  - Analyze trace elements of objects on the skin
- Technologies that recognize patterns in
  - \_\_\_\_\_
  - \_\_\_\_\_
  - \_\_\_\_\_

***Unit 5 Fingerprint Questions – Use your notes, worksheets and textbook to answer the following***

**Directions:** Use your Unit. 5 Notes to answer the following questions. **Use complete sentences.** Be thorough in your answers!

1. What are the three basic fingerprint patterns?

\_\_\_\_\_

2. Explain when and how fingerprints are formed.

3. Explain the terms visible, plastic, and latent fingerprints.

4. What are minutiae and why are they important to fingerprinting?

5. What makes fingerprints reliable evidence to use in court? What determines whether a fingerprint is a true match?



6. Identify each fingerprint by placing the number on the line of the matching fingerprint pattern.

\_\_\_ Plain Arch

\_\_\_ Tented Arch

\_\_\_ Radial loop

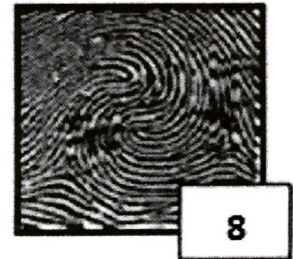
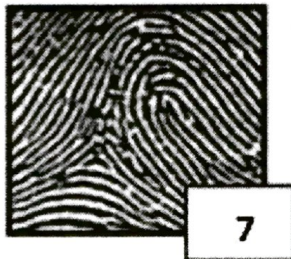
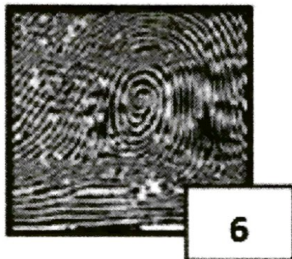
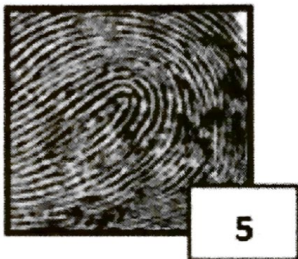
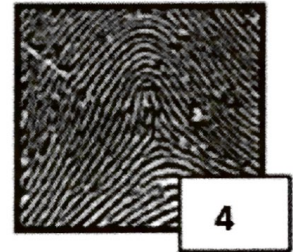
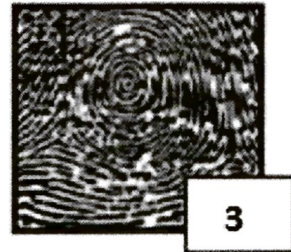
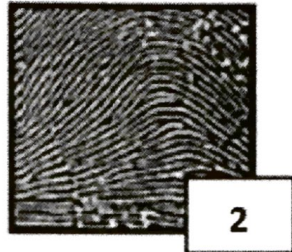
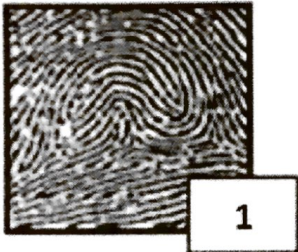
\_\_\_ Ulnar Loop

\_\_\_ Plain Whorl

\_\_\_ Central Pocket Whorl

\_\_\_ Double Loop/Whorl

\_\_\_ Accidental Whorl



7. Identify each ridge characteristics by placing the letter on the line of the matching minutiae pattern.

\_\_\_ Bridge

\_\_\_ Core

\_\_\_ Crossover

\_\_\_ Delta

\_\_\_ Dot or Island Ridge

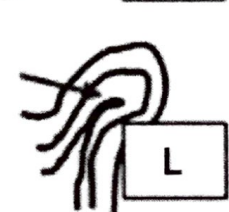
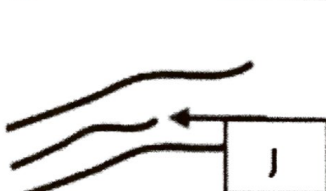
\_\_\_ Short Ridge

\_\_\_ Ending Ridge

\_\_\_ Eye or Island

\_\_\_ Bifurcation

\_\_\_ Hook



8. List and explain two of the four ways of visualizing latent prints.

9. \_\_\_\_\_ What type of pattern is displayed by this print?

- a. Plain Arch
- b. Tented Arch
- c. Radial loop
- d. Ulnar Loop
- e. Plain Whorl
- f. Central Pocket Whorl
- g. Double Loop/Whorl
- h. Accidental Whorl



10. On the fingerprint, find and label each of the following:

- Short ridge
- Island Ridge
- Dot
- Ridge ending
- Bifurcation
- Eye or Island
- Delta

11. What percent of the population is estimated to have each type of fingerprint pattern?

Fingerprint Pattern	Percent of Population



## Unit 5 Fingerprint Review Worksheet

**True or False:** For any false question, explain why it is false.

1. True or False? Fingerprints are considered to be a form of class evidence.  
\_\_\_\_\_
2. True or False? Patent(Visible) prints must be dusted or chemically treated in order to identify the ridge pattern and minutiae.  
\_\_\_\_\_
3. True or False? Whorls are the most common form of fingerprints.  
\_\_\_\_\_
4. True or False? No one has found two people with more than 8 minutiae in common.  
\_\_\_\_\_
5. True or False? It is necessary to obtain a full print from a suspect in order to match his fingerprint with a fingerprint found at the crime scene  
\_\_\_\_\_
6. True or False? Fingerprints are formed within the basal layer of the skin.  
\_\_\_\_\_
7. True or False? Identical twins have matching fingerprints.  
\_\_\_\_\_

**Multiple Choice** Write the letter of the correct answer on the line below

8. \_\_\_\_\_ Fingerprints are formed
 

a. shortly after birth	c. at about two years of age
b. at 10 weeks' gestation	d. at 17 weeks' pregnancy
9. \_\_\_\_\_ One way to make prints visible is to apply certain chemicals. What piece of evidence would investigators use Ninhydrin on?
 

a. wood	b. paper	c. glass	d. cardboard
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10. \_\_\_\_\_ Which of the following is known as the super glue test:
 

a. Ninhydrin	b. Iodine fuming	c. Cyanoacrylate vapor	d. Silver Nitrate
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11. \_\_\_\_\_ These appear white on a fingerprint:
 

a. Ridge	b. Valley	c. Dermis	d. Delta
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12. \_\_\_\_\_ What is the name given to the study of fingerprints?
 

a. Entomology	b. pathology	c. endoscopy	d. dactyloscopy
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13. \_\_\_\_\_ Which fingerprint test reacts with amino acids and forms white prints?
 

a. Ninhydrin	b. Iodine fuming	c. Cyanoacrylate vapor	d. Silver Nitrate
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**Fill in and Short Answer**

14. Fingerprints that are actual indentations left in some soft material such as clay or putty are referred to as \_\_\_\_\_.

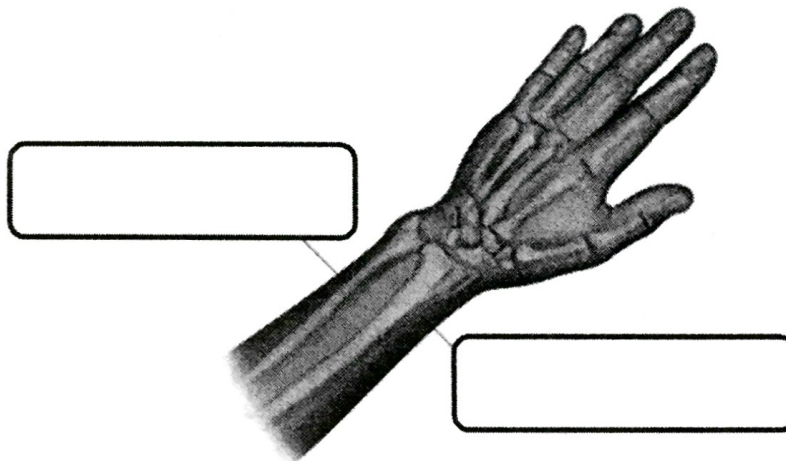
15. What program provides digital, automated fingerprint searches for the FBI?

\_\_\_\_\_ (\_\_\_\_\_)

Explain how this system works:

16. Pick one of the true cases you read about or watched in one of the shows and describe how fingerprint evidence was used by investigators to convict the killer.

17. Label each bone in the arm:



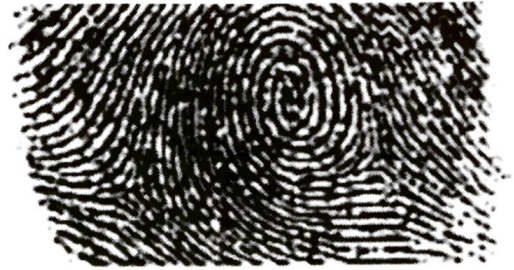
18. Identify the fingerprint patterns:



\_\_\_\_\_



19. Refer to the two prints below. The first print is taken from the FBI files of a known suspect. The second print has been lifted off a glass taken from a crime scene. Determine if this is a match. Justify your answer.
- Identify the type of ridge pattern found in both prints.
  - Use highlighter or colored pencils to circle areas of similarity or differences.











20. Look for and label minutiae in the fingerprints below. Find at least 8 on each print.



21. What type of fingerprint (plastic, visible, or latent) would be likely to be found in, on, or by means of the following materials? A) bloody knife \_\_\_ b) gun \_\_\_ c) mud \_\_\_ d) a glass \_\_\_  
 e) ransom note \_\_\_ f) bat \_\_\_ g) dust \_\_\_ h) soda can \_\_\_
22. What would be the best method for developing latent fingerprints on the following materials? Would it be to use powder, silver nitrate, iodine, Ninhydrin or super glue?
- can \_\_\_\_\_
  - ransom note \_\_\_\_\_
  - door \_\_\_\_\_
  - cardboard \_\_\_\_\_



23. Match the crime scene print to one of the suspect's fingerprints. Justify your match by identifying the fingerprint pattern along with as many fingerprint minutiae found in both the crime scene print and the suspect's fingerprint. Circle and label the common minutiae points on both the crime scene print and the suspect's fingerprint. (Extra time? Name the fingerprint pattern of each print)

<p><b>Crime-Scene Print</b></p> 	<p><b>Suspect A</b></p> 	<p><b>Suspect B</b></p> 
<p><b>Suspect C</b></p> 	<p><b>Suspect D</b></p> 	<p><b>Suspect E</b></p> 
<p><b>Suspect F</b></p> 	<p><b>Suspect G</b></p> 	<p><b>Suspect H</b></p> 