

SI Forensics - Full Discipline Demo

Fingerprinting

Final Report - Answer Guide

Institution	Science Interactive University
Session	SI Forensics - Full Discipline Demo
Course	SI Forensics - Full Discipline Demo
Instructor	Sales SI Demo

Test Your Knowledge

Correctly label each fingerprint pattern type.

⌘ Whorl

⌘ Loop

⌘ Arch

1

2

3



Correct answers:

1 Whorl 2 Arch 3 Loop

Classify each statement as pertaining to development of fingerprints with powder or chemicals.

⚡ Fingerprints are developed in a fume chamber.	
⚡ Utilizes a fingerprinting brush.	⚡ The developed fingerprint is lifted using tape.
⚡ Ideal for fingerprints on non-absorbent rigid surfaces, such as glass, mirrors, tile, plastic, finished furniture, and polished metals.	
⚡ Ideal for fingerprints on porous and pliable surfaces, such as paper, cloth, or wood	
⚡ Latent prints developed using this method are permanent.	
Powder Chemical	
1	2

Correct answers:

1 Utilizes a fingerprinting brush.

The developed fingerprint is lifted using tape.

Ideal for fingerprints on non-absorbent rigid surfaces, such as glass, mirrors, tile, plastic, finished furniture, and polished metals.

2 Fingerprints are developed in a fume chamber.

Ideal for fingerprints on porous and pliable surfaces, such as paper, cloth, or wood

Latent prints developed using this method are permanent.

Order the steps of fingerprints collection with the first step at the top and the last step at the bottom.

≡ Print all four fingers of the other hand simultaneously, without rolling.

1 **Correct answer:** Fill out the information about the individual on the fingerprinting card.

≡ Fill out the information about the individual on the fingerprinting card.

2 **Correct answer:** Individually full-roll each finger.

≡ Print each thumb individually without rolling.

3 **Correct answer:** Print all four fingers of one hand simultaneously, without rolling.

≡ Individually full-roll each finger.

4 **Correct answer:** Print all four fingers of the other hand simultaneously, without rolling.

≡ Print all four fingers of one hand simultaneously, without rolling.

5 **Correct answer:** Print each thumb individually without rolling.

Match the illustration of the fingerprint minutiae with the correct term.

	Bridge	1
	Dot	2
	Trifurcation	3
	Island	4
	Double Bifurcation	5
	Eye (lake or enclosure)	6
	Spur	7
	Bifurcation	8
	Ridge Ending	9

Correct answers:

1	2	3
4	5	6
7	8	9

Exploration

What is the most common type of basic fingerprint pattern?

- ☐ Whorl
 - ☒ Loop
 - ☐ Arch
- ✓

The minutiae are what distinguish individual fingerprints.

- ☒ True
 - ☐ False
- ✓

Latent fingerprints do not need processing to be visible.

- ☐ True
 - ☒ False
- ✓

The use of too much powder can result in the fingerprint being overdeveloped, causing the fine minutiae to be indistinguishable.

- ☒ True
 - ☐ False
- ✓

Anyone who has been fingerprinted has committed a crime.

- ☐ True
 - ☒ False
- ✓

Exercise 1

Which fingerprint pattern was the most common among the samples you observed in this exercise? Does this result surprise you?

Did you have difficulty in identifying any of the types or subtypes for any of the fingerprints presented in this exercise? Why or why not?

If you were presented with an unknown fingerprint and were asked to compare it to the sample fingerprints provided in this exercise, what steps would you take to determine if any of the sample fingerprints were a match?

Data Table 1: Print Classifications
(SAMPLE ANSWER BELOW)

Print	Pattern	Subtype
a	Whorl	Central pocket loop
b	Whorl	Double loop
c	Loop	Ulnar
d	Loop	Ulnar
e	Arch	Plain
f	Whorl	Plain
g	Loop	Ulnar
h	Loop	Radial

Exercise 2

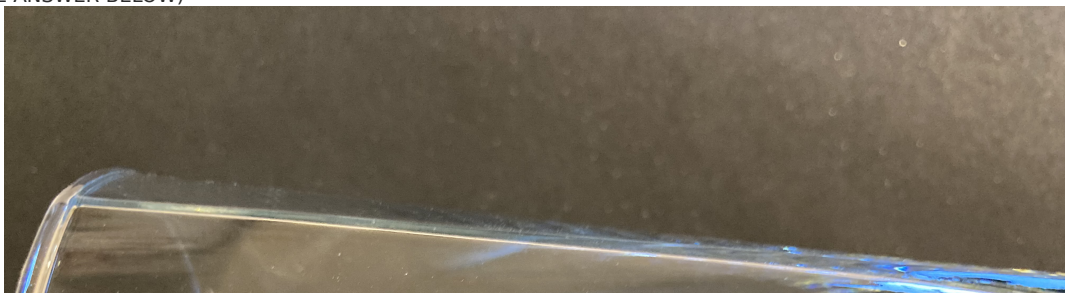
Was it easy or difficult to develop a print with fingerprint dust? Did it require a lot of practice? How do you think this influences the industry with respect to training and implementation?

Why did you take a photograph of the fingerprint before lifting it?

Why did you put on gloves before dusting for and lifting the fingerprint?

What similarities did you notice about the powder developed fingerprint and the chemically developed fingerprint? What differences did you observe?

Photo 1: Powder Developed Fingerprint on Glass
(SAMPLE ANSWER BELOW)



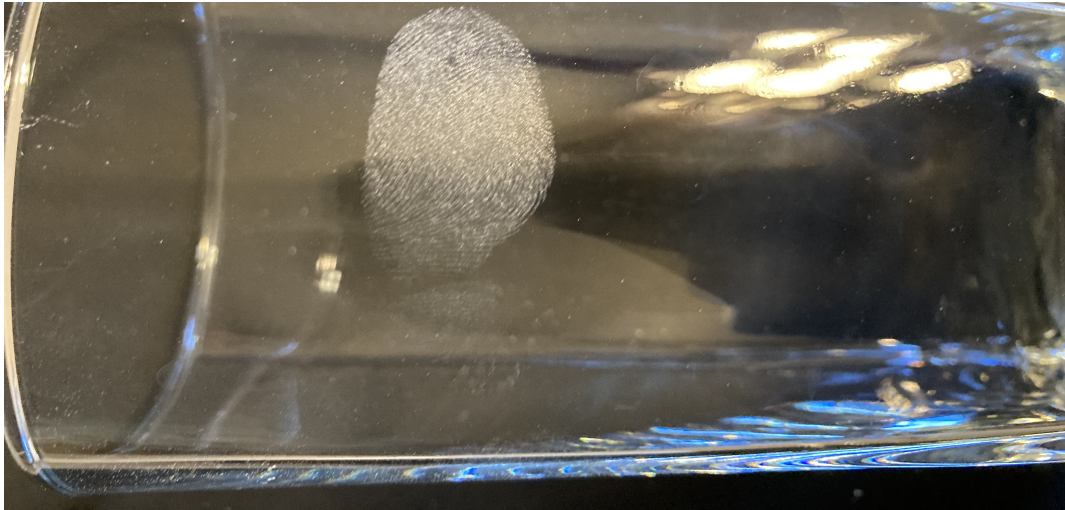


Photo 2: Powder Developed Fingerprint on Lift Tape
(SAMPLE ANSWER BELOW)





Photo 3: Chemically Developed Fingerprint on Slide
(SAMPLE ANSWER BELOW)



Exercise 3

How many minutiae points were you able to match between the lifted print and the rolled print? Would this hold up in any courts of law?

Why is it important to roll a fingerprint from nail to nail?

What is the benefit of both rolling each fingerprint individually and taking all four fingerprints simultaneously?

Photo 4: Developed Fingerprint
(SAMPLE ANSWER BELOW)

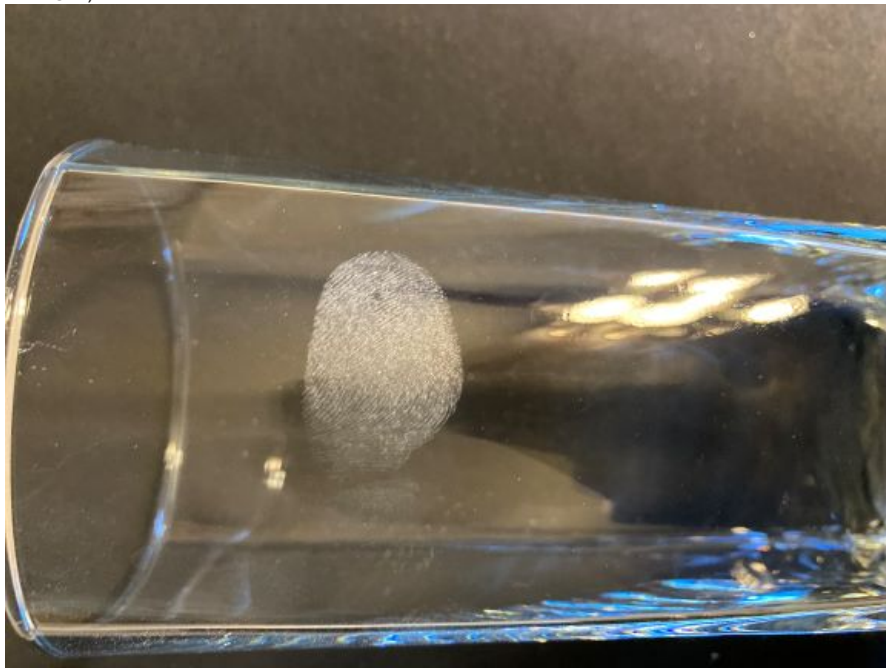
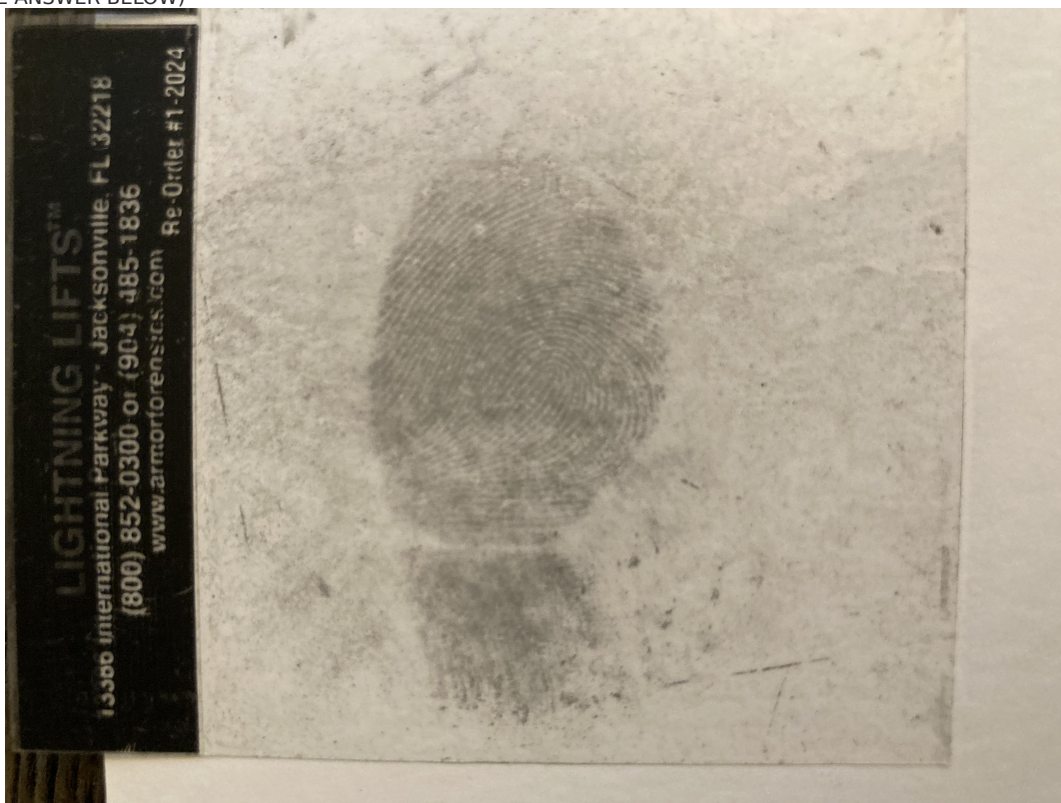


Photo 5: Lifted Fingerprint
(SAMPLE ANSWER BELOW)



(SAMPLE ANSWER BELOW)

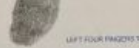
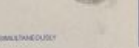
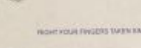
APPLICANT * Last Name, first Middle, last		LEAVE BLANK		TYPE OR PRINT ALL INFORMATION IN BLACK LAST NAME FIRST NAME		FBI LEAVE BLANK	
SIGNATURE OF PERSON FINGERPRINTED <i>Jane Mary Doe</i> RESIDENCE OF PERSON FINGERPRINTED 123 Sesame Street		ALIASES: AKA None		DOB M D Y		DATES OF BIRTH: DOB Month Day Year 09 17 1955	
DATE 10/26/80		SIGNATURE OF OFFICIAL TAKING FINGERPRINTS <i>Gary Jones</i> EMPLOYER AND ADDRESS New York Public School		CITIZENSHIP: CTZ U.S. B. S. I. E.		SEX RACE HGT WGT EYES HAIR PLACE OF BIRTH POB F W 5' 10" 150 lb Brn Brn U.S. B. S. I. E.	
REASON FINGERPRINTED Government Job Application		UNIVERSAL CONTROL NO.: UCN		LEAVE BLANK			
		ARMED FORCES NO.: MNU		CLASS: _____			
		SOCIAL SECURITY NO.: SOC XXXXXXXXXX		SEX: _____			
		MISCELLANEOUS NO.: MNU					
							
1 R THUMB		2 R INDEX		3 R MIDDLE		4 R RING	
							
5 R LITTLE		1 L THUMB		2 L INDEX		3 L MIDDLE	
							
4 L RING		5 L LITTLE		1 R THUMB		2 R INDEX	
							
3 R MIDDLE		4 R RING		5 R LITTLE		1 L THUMB	
							
2 L INDEX		3 L MIDDLE		4 L RING		5 L LITTLE	

Photo 7: Fingerprint Card 2
(SAMPLE ANSWER BELOW)

APPLICANT		LEAVE BLANK		TYPE OR PRINT ALL INFORMATION IN BLACK		FBI		LEAVE BLANK																	
SIGNATURE OF PERSON FINGERPRINTED		LAST NAME		FIRST NAME		MIDDLE NAME																			
<i>Rebecca Smith</i>		Smith		Rebecca		Sarah																			
RESIDENCE OF PERSON FINGERPRINTED		ALSOES AKA		D		R		I																	
456 Main Street		Bex																							
DATE		CITIZENSHIP		SEX		RACE		DOB																	
10/26/20		United States		F		W		04/21/1976																	
SIGNATURE OF OFFICIAL TAKING FINGERPRINTS		YOUNG		LOCAL		HEIGHT		WEIGHT																	
<i>George Jones</i>						62"		140 lb																	
EMPLOYER AND ADDRESS		UNIVERSAL CONTROL NO.		LCN		EYES		HAIR																	
Unemployed						Blue		Brown																	
REASON FINGERPRINTED		ARMED FORGONE NO.		MNU		CLASS																			
CASA volunteer application		SOCIAL SECURITY NO.		SOC		SET																			
		XXXXXXXXXX		MNU																					
		MISCELLANEOUS NO.		MNU																					
LEAVE BLANK																									
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Observation 1: Lifted Fingerprint Pattern
(SAMPLE ANSWER BELOW)

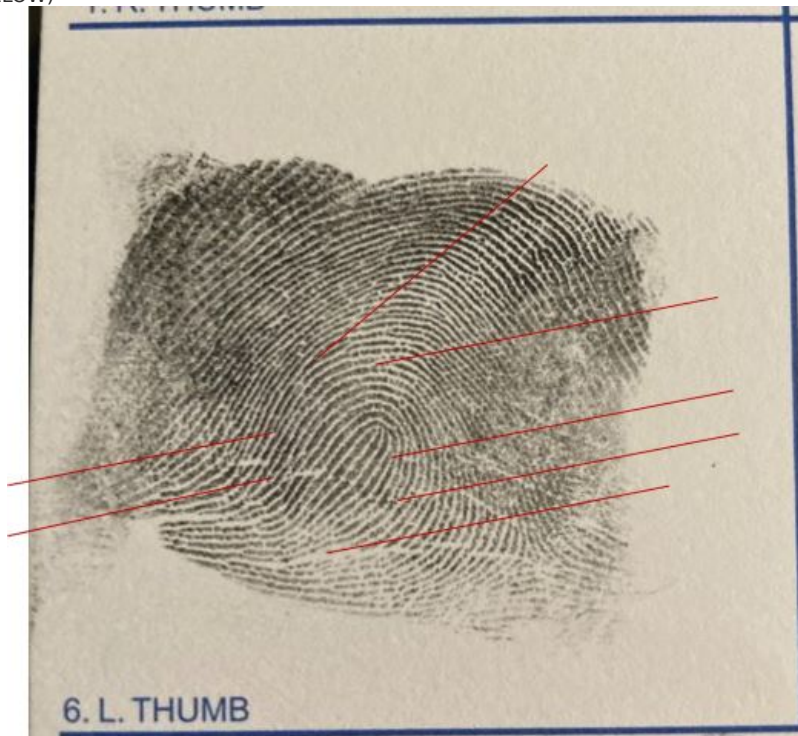
Ulnar loop

Observation 2: Rolled Fingerprints with Matching Pattern
(SAMPLE ANSWER BELOW)

Fingerprint card 1: Right little, left thumb, left ring, left little.

Fingerprint card 2: Right thumb, right middle, right ring, right little, left middle, left ring

Photo 8: Matching Rolled Print
(SAMPLE ANSWER BELOW)



Observation 3: Difficulties and Sources of Error
(SAMPLE ANSWER BELOW)

Student answers will vary based on the level of difficulty they experienced. Difficulties may include overdeveloped lifted prints or poorly rolled fingerprints.

Competency Review

Which fingerprint pattern is characterized by concentric circles or spirals in the center?

- ☒ Whorl ✓
 - ☐ Arch
 - ☐ Loop
-

Which minutia pattern is displayed in the following image?



- ☐ Bifurcation
 - ☒ Double Bifurcation ✓
 - ☐ Trifurcation
 - ☐ Spur
-

Fingerprints developed using powder are not reversible.

- ☐ True
 - ☒ False ✓
-

When collecting fingerprints on an FBI card, all five fingerprints are taken simultaneously.

- ☐ True
- ☒ False

✓

Which fingerprint pattern is displayed in the following image?



- ☐ Central pocket loop
- ☐ Radial loop
- ☐ Double loop
- ☒ Ulnar loop

✓

Cyanoacrylate developed latent fingerprints when both were placed in a fuming jar and exposed to ____.

- ☒ heat
- ☐ light
- ☐ air
- ☐ powder

✓

When dusting for fingerprints, the powder should be applied with a firm dabbing motion to enough full coverage of the powder.

- ☐ True
- ☒ False

✓

When identifying a fingerprint, first the type and subtype must be identified to narrow down the possible fingerprint sources.

☒ True



☐ False

Extension Questions

If everyone has a unique fingerprint, then should fingerprint comparisons always be considered definitive evidence? Why or why not? (SAMPLE ANSWER BELOW)

Fingerprint evidence is not necessarily always definitive. This is because human error can play a large role in misidentifying the source of a fingerprint. Additionally, fingerprints can become smudged, which may result in errors in fingerprint comparisons.