

**Online Test Bank**  
*for*

**Forensic Science**  
**From Crime Scene to Crime Lab**

**Second Edition**

**Richard Saferstein, Ph.D.**

*Forensic Science Consultant, Mt. Laurel, New Jersey*

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# **CHAPTER 1**

## **Introduction**

### **Chapter 1 Multiple Choice**

1. Forensic science is the application of science to:
- a. Crime-scene reconstruction.
  - b. Civil laws.
  - c. Criminal laws.
  - d. Both civil and criminal laws.

Answer: d

Objective: Define forensic science and list the major disciplines it encompasses.

Page number: 2

Level: Basic

2. The fictional character of Sherlock Holmes was created by:
- a. Dalton.
  - b. Doyle.
  - c. Darwin.
  - d. Denton.

Answer: b

Objective: Recognize the major contributors to the development of forensic science.

Page number: 7

Level: Basic

3. Who is known as the “father of forensic toxicology”?
- a. Orfila
  - b. Locard
  - c. Osborn
  - d. Lattes

Answer: a

Objective: Recognize the major contributors to the development of forensic science.

Page number: 5

Level: Intermediate

4. Who developed the system known as anthropometry?
- a. Goddard
  - b. Gross
  - c. Bertillon
  - d. Galton

Answer: c

Objective: Recognize the major contributors to the development of forensic science.

Page number: 5

Level: Basic

5. Who undertook the first definitive study of fingerprints as a method of personal identification?
- a. Gross
  - b. Lattes
  - c. Locard
  - d. Galton

Answer: d

Objective: Recognize the major contributors to the development of forensic science.

Page number: 5

Level: Basic

6. Who devised a technique for determining the blood group of a dried bloodstain, which he applied to criminal investigations?
- a. Lattes
  - b. Gross
  - c. Locard
  - d. Bertillon

Answer: a

Objective: Recognize the major contributors to the development of forensic science.

Page number: 8

Level: Basic

7. Who established the comparison microscope as the indispensable tool of the modern firearms examiner?
- a. Goddard
  - b. Lattes
  - c. Gross
  - d. Galton

Answer: a

Objective: Recognize the major contributors to the development of forensic science.

Page number: 8

Level: Basic

8. Who wrote the first treatise describing the application of science to the field of criminal investigation?
- a. Locard
  - b. Osborn
  - c. Gross
  - d. Galton

Answer: c

Objective: Recognize the major contributors to the development of forensic science.

Page numbers: 5–6

Level: Intermediate

9. Who established the first workable crime laboratory?
- a. Osborn
  - b. Locard

- c. Bertillon
- d. Galton

Answer: b

Objective: Recognize the major contributors to the development of forensic science.

Page number: 8

Level: Intermediate

10. What is the oldest forensic laboratory in the United States?

- a. New York City Police Department
- b. Federal Bureau of Investigation
- c. Secret Service
- d. Los Angeles Police Department

Answer: d

Objective: Recognize the major contributors to the development of forensic science.

Page number: 11

Level: Difficult

11. Which entity maintains the largest crime laboratory in the world?

- a. Scotland Yard
- b. Royal Canadian Mounted Police
- c. Federal Bureau of Investigation
- d. Los Angeles Police Department

Answer: c

Objective: Recognize the major contributors to the development of forensic science.

Page number: 11

Level: Difficult

12. Which of the following would not be included in the work of the biology unit of a crime lab?

- a. Blood typing
- b. Comparison of hairs
- c. DNA profiling
- d. Fingerprint analysis

Answer: d

Objective: Describe the services of a typical comprehensive crime laboratory in the U.S. criminal justice system.

Page number: 15

Level: Difficult

13. Which unit is responsible for examining body fluids and organs for the presence of drugs and poisons?

- a. Toxicology unit
- b. Physical science unit
- c. Biology unit
- d. Trace evidence unit

Answer: a

Objective: Describe the services of a typical comprehensive crime laboratory in the US criminal justice system.

Page number: 16

Level: Difficult

14. Which one of the following people did *not* make a contribution to forensic toxicology?
- a. Valentin Ross
  - b. Alphonse Bertillon
  - c. Carl Wilhelm Scheele
  - d. Mathieu Orfila

Answer: b

Objective: Recognize the major contributors to the development of forensic science.

Page number: 5

Level: Difficult

15. In *Kumho Tire Co., Ltd. v. Carmichael*, the US Supreme Court ruled that the “gatekeeping” role of a trial judge:

- a. Was restricted to scientific testimony.
- b. Applied only to cases involving capital crimes.
- c. Was subject to appeal by a higher court.
- d. Applied to all expert testimony.

Answer: d

Objective: Compare and contrast the *Frye* and *Daubert* decisions relating to the admissibility of scientific evidence in the courtroom.

Page number: 22

Level: Intermediate

16. The concept of “general acceptance” of scientific evidence relates to what?
- a. *Frye* standard
  - b. Exclusionary rule
  - c. First Amendment
  - d. Miranda warnings

Answer: a

Objective: Compare and contrast the *Frye* and *Daubert* decisions relating to the admissibility of scientific evidence in the courtroom.

Page number: 20

Level: Intermediate

17. Which of the following makes a false statement? An expert witness must be able to demonstrate:

- a. Education in his/her area of expertise.
- b. A formal degree in forensic science.
- c. Significant experience in a relevant field.
- d. Working knowledge of the subject matter.

Answer: b

Objective: Explain the role and responsibilities of the expert witness.

Page numbers: 22–23

Level: Difficult

18. Who is the final evaluator of forensic evidence?

- a. Police
- b. Jury
- c. Accused
- d. Media

Answer: b

Objective: Explain the role and responsibilities of the expert witness.

Page number: 21

Level: Difficult

19. Bite marks would be *least* likely to be found in cases involving:

- a. Sexual abuse
- b. Murder
- c. Arson
- d. Assault

Answer: c

Objective: List the specialized forensic services, aside from the crime laboratory, that are generally available to law enforcement personnel.

Page number: 17

Level: Intermediate

20. Forensic odontology refers to the study of which of the following?

- a. Teeth
- b. Drugs
- c. Bones
- d. Rocks

Answer: a

Objective: List the specialized forensic services, aside from the crime laboratory, that are generally available to law enforcement personnel.

Page number: 17

Level: Intermediate

21. The case of *Coppolino v. State* highlights issues dealing with what?

- a. Search and seizure
- b. Admissibility of the polygraph
- c. Acceptability of new scientific tests
- d. Warrantless searches

Answer: c

Objective: Compare and contrast the *Frye* and *Daubert* decisions relating to the admissibility of scientific evidence in the courtroom.

Page number: 22

Level: Difficult



22. The scientific method requires that scientific evidence be validated by what means?
- a. Formulating pertinent questions
  - b. Formulating hypotheticals
  - c. Performing experiments
  - d. All of the above

Answer: d

Objective: Define forensic science and list the major disciplines it encompasses.

Page number: 20

Level: Intermediate

23. Which of the following services does not normally lie within the expertise of the forensic scientist?
- a. Drug identification
  - b. Wood comparisons
  - c. Document examination
  - d. Polygraph examination

Answer: d

Objective: Define forensic science and list the major disciplines it encompasses.

Page number: 16

Level: Difficult

24. What judicial case set forth the most current guidelines for determining the admissibility of scientific examinations in the federal courts?
- a. *Frye v. United States*
  - b. *Daubert v. Merrell Dow Pharmaceuticals*
  - c. *Coppolino v. State*
  - d. *Mapp v. United States*

Answer: b

Objective: Compare and contrast the *Frye* and *Daubert* decisions relating to the admissibility of scientific evidence in the courtroom.

Page number: 21

Level: Difficult

25. The effectiveness of an expert's testimony is almost always dependent on:
- a. The ability of the expert to talk in clear, concise language.
  - b. The educational background of the expert.
  - c. The scientific validity of the tests used.
  - d. All of the above

Answer: d

Objective: Explain the role and responsibilities of the expert witness.

Page numbers: 22–23

Level: Intermediate

26. The dramatization of forensic science on television has led to a phenomenon known as what?
- a. NCIS effect
  - b. NYPD effect

- c. CSI effect
- d. LAPD effect

Answer: c

Objective: Explain the role and responsibilities of the expert witness.

Page number: 4

Level: Basic

27. The lay witness provides testimony that relies on what?

- a. Scientific education
- b. Personal opinions
- c. Personal knowledge
- d. Scientific experience

Answer: c

Objective: Explain the role and responsibilities of the expert witness.

Page number: 24

Level: Intermediate

28. What U.S. Supreme Court case made it necessary for the forensic scientist to appear in court?:

- a. *Melendez-Diaz v. Massachusetts*
- b. *Crawford v. Washington*
- c. *Coppolino v. State*
- d. *Frye v. United States*

Answer: a

Objective: Compare and contrast the *Frye* and *Daubert* decisions relating to the admissibility of scientific evidence in the courtroom.

Page number: 24

Level: Basic

29. What area of forensic science examines the relationship between human behavior and legal proceedings?

- a. Forensic psychology
- b. Forensic sociology
- c. Forensic pathology
- d. Forensic psychiatry

Answer: d

Objective: List the specialized forensic services, aside from the crime laboratory, that are generally available to law enforcement personnel.

Page number: 17

Level: Basic

30. What area of forensic science is concerned with failure analysis, accident reconstruction, and causes and origins of fires or explosions?

- a. Forensic engineering
- b. Forensic psychiatry
- c. Forensic anthropology

d. Forensic odontology

Answer: a

Objective: List the specialized forensic services, aside from the crime laboratory, that are generally available to law enforcement personnel.

Page number: 17

Level: Basic

31. The current system of crime laboratories in the United States can best be described as which of the following?

- a. Centralized
- b. Regional
- c. Decentralized
- d. National

Answer: c

Objective: Account for the rapid growth of forensic laboratories in the past forty years.

Page number: 13

Level: Intermediate

32. Approximately how many crime labs are currently operating in the United States (including federal, state, county, and municipal labs)?

- a. 250
- b. 400
- c. 150
- d. 200

Answer: b

Objective: Account for the rapid growth of forensic laboratories in the past forty years.

Page number: 12

Level: Difficult

33. Which of the following can be said to explain the rapid growth of crime labs during the last forty years?

- a. Supreme Court decisions in the 1960s
- b. A staggering increase in crime rates in the United States
- c. The advent of DNA profiling
- d. All of the above

Answer: d

Objective: Account for the rapid growth of forensic laboratories in the past forty years.

Page number: 12

Level: Basic

34. In the case of *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, the US Supreme Court advocated that a “gatekeeper” determine the admissibility and reliability of scientific evidence.

Who is this gatekeeper?

- a. Expert witness
- b. Prosecutor
- c. Jury

d. Trial judge

Answer: d

Objective: Compare and contrast the *Frye* and *Daubert* decisions relating to the admissibility of scientific evidence in the courtroom.

Page number: 21

Level: Difficult

35. The eleven sections of the American Academy of Forensic Science include all of the following except:

- a. General
- b. Arson/explosives
- c. Jurisprudence
- d. Criminalistics

Answer: b

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 2

Level: Intermediate

## **Chapter 1 True-False**

1. Karl Landsteiner and Leone Lattes are associated with the area of blood typing.

Answer: True

Objective: Recognize the major contributors to the development of forensic science.

Page numbers: 7–8

Level: Basic

2. Colin Pitchfork was the first individual exonerated using DNA profiling.

Answer: False

Objective: Recognize the major contributors to the development of forensic science.

Page number: 9

Level: Intermediate

3. Dr. Walter C. McCrone made significant contributions to forensic science involving microscopy.

Answer: True

Objective: Recognize the major contributors to the development of forensic science.

Page number: 8

Level: Basic

4. The increase in crime rates in the United States has led to an increase in the number of crime laboratories.

Answer: True

Objective: Account for the rapid growth of forensic laboratories in the past forty years.

Page number: 12

Level: Intermediate

5. All illicit drug seizures must be sent to a forensic laboratory for confirmatory analysis.

Answer: True

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 12

Level: Intermediate

6. It is the responsibility of the forensic investigator to determine innocence or guilt.

Answer: False

Objective: Define forensic science and list the major disciplines it encompasses.

Page number: 24

Level: Difficult

7. The Bureau of Alcohol, Tobacco, Firearms, and Explosives is a state-run agency.

Answer: False

Objective: Account for the rapid growth of forensic laboratories in the past forty years.

Page number: 13

Level: Intermediate

8. The current system of crime laboratories in the United States is decentralized.

Answer: True

Objective: Account for the rapid growth of forensic laboratories in the past forty years.

Page number: 13

Level: Difficult

9. Forensic odontologists look at bones to identify victims.

Answer: False

Objective: List the specialized forensic services, aside from the crime laboratory, that are generally available to law enforcement personnel.

Page number: 17

Level: Intermediate

10. The principle of “general acceptance” comes from *Frye v. United States*.

Answer: True

Objective: Compare and contrast the *Frye* and *Daubert* decisions relating to the admissibility of scientific evidence in the courtroom.

Page number: 20

Level: Basic

11. The American Academy of Forensic Sciences is the largest forensic science organization in the world.

Answer: True

Objective: Define forensic science and list the major disciplines it encompasses.

Page number: 2

Level: Intermediate

12. Sir Arthur Conan Doyle's Sherlock Holmes had a large influence on popularizing scientific crime-detection methods.

Answer: True

Objective: Recognize the major contributors to the development of forensic science.

Page number: 7

Level: Basic

13. The United States does not have a national system of forensic laboratories.

Answer: True

Objective: Account for the rapid growth of forensic laboratories in the past forty years.

Page number: 13

Level: Difficult

14. One major problem in the forensic DNA community is the backlog of unanalyzed DNA samples.

Answer: True

Objective: Account for the rapid growth of forensic laboratories in the past forty years.

Page number: 13

Level: Intermediate

15. Regional laboratories have diminished the accessibility of a crime laboratory to many local law enforcement agencies.

Answer: False

Objective: Account for the rapid growth of forensic laboratories in the past forty years.

Page number: 13

Level: Difficult

16. Soil analysis is performed by the biology unit.

Answer: False

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 15

Level: Intermediate

17. The firearms unit may also analyze tool marks.

Answer: True

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 15

Level: Basic

18. A voiceprint transforms a visual graphic display into speech.

Answer: False

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 16

Level: Difficult

19. The five units of a basic a crime lab are the physical science unit, the biology unit, the firearms unit, the document examination unit, and the photography unit.

Answer: True

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page numbers: 14–15

Level: Intermediate

20. Physical evidence is subject to bias.

Answer: False

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 20

Level: Basic

21. One of the earliest crime laboratories was founded by Albert Osborn.

Answer: False

Objective: Recognize the major contributors to the development of forensic science.

Page number: 8

Level: Difficult

22. The case of *Frye v. United States* deals with the legal issue of general acceptance of scientific principles.

Answer: True

Objective: Compare and contrast the *Frye* and *Daubert* decisions relating to the admissibility of scientific evidence in the courtroom.

Page number: 20

Level: Difficult

23. Performing a polygraph examination is not normally within the expertise of the forensic scientist.

Answer: True

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 16

Level: Intermediate

24. The effectiveness of an expert's testimony does not usually depend on the educational background of the expert.

Answer: False

Objective: Explain the role and responsibilities of the expert witness.

Page number: 23

Level: Basic

25. Forensic science is the application of science to criminal laws only.

Answer: False

Objective: Define forensic science and list the major disciplines it encompasses.

Page number: 2

Level: Basic

26. Locard's exchange principle states that, whenever two objects come into contact with one another, there is exchange of materials between them.

Answer: True

Objective: Recognize the major contributors to the development of forensic science.

Page number: 8

Level: Basic

27. In 1972, New York began creating an integrated network of state-operated forensic laboratories consisting of regional and satellite facilities.

Answer: False

Objective: Recognize the major contributors to the development of forensic science.



Page number: 11

Level: Difficult

28. The increase in US crime rates since the 1960s has not had any effect on the growth of crime laboratories.

Answer: False

Objective: Account for the rapid growth of forensic laboratories in the past forty years.

Page number: 12

Level: Basic

29. The federal government has no single law enforcement or investigative agency that has unlimited jurisdiction throughout the country.

Answer: True

Objective: Account for the rapid growth of forensic laboratories in the past forty years.

Page number: 13

Level: Difficult

30. Differences in local laws have no effect on the types of services offered by crime labs in different communities.

Answer: False

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 14

Level: Basic

31. The comparison of hairs and fibers would be performed in the biology unit.

Answer: True

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 15

Level: Intermediate

32. The examination of garments and other objects in order to detect firearm discharge residues would be performed in the biology unit.

Answer: False

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 15

Level: Intermediate

33. Providing expert testimony is not one of the main functions of a forensic scientist.

Answer: False

Objective: Explain the role and responsibilities of the expert witness.

Page numbers: 20, 22

Level: Basic

34. An expert witness gives testimony on events or observations that arise from personal knowledge.

Answer: False

Objective: Explain the role and responsibilities of the expert witness.

Page number: 24

Level: Difficult

35. A lay witness's testimony cannot usually contain the personal opinions of the witness.

Answer: True

Objective: Explain the role and responsibilities of the expert witness.

Page number: 24

Level: Difficult

36. The physical science unit is responsible for examining burned or charred documents.

Answer: False

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page numbers: 14–15

Level: Intermediate

37. The toxicology unit would determine the amount of alcohol consumed by an individual.

Answer: True

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 16

Level: Intermediate

## **Chapter 1 Fill in the Blank**

1. Forensic science is the application of science to the \_\_\_\_\_.

Answer: Law

Objective: Define forensic science and list the major disciplines it encompasses.

Page number: 2

Level: Basic

2. The Chinese manuscript \_\_\_\_\_ is one of the earliest records of the application of forensics to criminal cases.

Answer: *Yi Yu Ji*

Objective: Recognize the major contributors to the development of forensic science.

Page number: 4

Level: Difficult

3. In 1828, \_\_\_\_\_ invented the polarizing microscope.

Answer: William Nichol

Objective: Recognize the major contributors to the development of forensic science.

Page number: 5

Level: Difficult

4. Fingerprinting replaced \_\_\_\_\_ as a method of personal identification.

Answer: Anthropometry

Objective: Recognize the major contributors to the development of forensic science.

Page number: 5

Level: Intermediate

5. The principle that states that a cross-transfer of materials occurs when two objects come into contact with each other is known as \_\_\_\_\_.

Answer: Locard's exchange principle

Objective: Recognize the major contributors to the development of forensic science.

Page number: 8

Level: Basic

6. Goddard's work helped to establish the \_\_\_\_\_ as the indispensable tool of the firearms examiner.

Answer: Comparison microscope

Objective: Recognize the major contributors to the development of forensic science.

Page number: 8

Level: Difficult

7. Four major federal crime laboratories are those of the Drug Enforcement Administration, the Federal Bureau of Investigation, the Bureau of Alcohol, Tobacco, Firearms, and Explosives, and the \_\_\_\_\_.

Answer: US Postal Inspection Service

Objective: Recognize the major contributors to the development of forensic science.

Page number: 13

Level: Intermediate

8. The \_\_\_\_\_ unit applies principles and techniques of chemistry, physics, and geology to the identification and comparison of crime-scene evidence.

Answer: Physical science

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 14

Level: Basic

9. The document examination unit studies the handwriting and \_\_\_\_\_ on questioned documents to ascertain their authenticity and/or source.

Answer: Typewriting

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 15

Level: Basic

10. The \_\_\_\_\_ unit analyzes telephoned threats and audio-recorded messages.

Answer: Voiceprint analysis

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 16

Level: Basic

11. Collecting evidence from a cell phone is an example of forensic \_\_\_\_\_ and digital analysis.

Answer: Computer

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 19

Level: Intermediate

12. The forensic scientist should be an advocate only of the \_\_\_\_\_.

Answer: Truth

Objective: Define forensic science and list the major disciplines it encompasses.

Page number: 24

Level: Difficult

13. \_\_\_\_\_ help criminal investigators retrieve evidence.

Answer: Evidence technicians

Objective: Define forensic science and list the major disciplines it encompasses.

Page number: 25  
Level: Intermediate

14. Extensive information about forensic science can be found on the \_\_\_\_\_.

Answer: Internet

Objective: Define forensic science and list the major disciplines it encompasses.

Page number: 26  
Level: Intermediate

15. The judicial case that set forth the current guidelines for determining the admissibility of scientific examinations in the federal courts is \_\_\_\_\_.

Answer: *Daubert v. Merrell Dow Pharmaceuticals, Inc.*

Objective: Compare and contrast the *Frye* and *Daubert* decisions relating to the admissibility of scientific evidence in the courtroom.

Page number: 21  
Level: Difficult

16. \_\_\_\_\_ is considered to be the “father of forensic toxicology.”

Answer: Mathieu Orfila

Objective: Recognize the major contributors to the development of forensic science.

Page number: 5  
Level: Intermediate

17. \_\_\_\_\_ undertook the first definitive study of fingerprints and developed a methodology of classifying them for filing.

Answer: Francis Henry Galton

Objective: Recognize the major contributors to the development of forensic science.

Page number: 5  
Level: Intermediate

18. \_\_\_\_\_ was the first to use a comparison microscope to analyze bullets to determine whether they were fired from the same gun.

Answer: Calvin Goddard

Objective: Recognize the major contributors to the development of forensic science.

Page number: 8  
Level: Difficult

19. The fee-for-service concept has encouraged the creation of a number of \_\_\_\_\_ laboratories.

Answer: Private

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 14

Level: Difficult

20. The \_\_\_\_\_ unit performs DNA profiling of dried bloodstains and other body fluids.

Answer: Biology

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 15

Level: Basic

21. The \_\_\_\_\_ unit examines body fluids and organs to determine the presence or absence of drugs and poisons.

Answer: Toxicology

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 16

Level: Basic

22. The \_\_\_\_\_ unit dispatches specially trained personnel to the crime scene to collect and preserve physical evidence that will later be processed at the crime laboratory.

Answer: Crime-scene investigation

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 17

Level: Intermediate

23. The case of \_\_\_\_\_ assigned the trial judge the task of ensuring that an expert's testimony rests on a reliable foundation and is relevant to the task at hand.

Answer: *Daubert v. Merrell Dow Pharmaceuticals, Inc.*

Objective: Compare and contrast the *Frye* and *Daubert* decisions relating to the admissibility of scientific evidence in the courtroom.

Page number: 21

Level: Difficult

24. The \_\_\_\_\_ witness evaluates evidence that the court lacks the expertise to do.

Answer: Expert

Objective: Explain the role and responsibilities of the expert witness.

Page number: 22

Level: Intermediate

25. A \_\_\_\_\_ witness must give testimony on events or observations that arise from personal knowledge.

Answer: Lay

Objective: Explain the role and responsibilities of the expert witness.

Page number: 24

Level: Intermediate

26. The \_\_\_\_\_ unit helps prepare photographic exhibits for courtroom presentation.

Answer: Photography

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 15

Level: Basic

### Chapter 1 Matching

Match the word in the first column to its definition in the second column. Each answer can be used only once.

**[[COMP: DO NOT SET THE BORDERS AROUND THE CELLS IN THIS TABLE.]]**

1. Expert witness	a. A systematic procedure that involves taking a series of body measurements as a means of distinguishing one individual from another
2. Locard's exchange principle	b. A process that uses strict guidelines to ensure careful and systematic collection, organization, and analysis of information
3. Scientific method	c. Lie detector
4. Forensic science	d. An individual who the court has determined possesses a particular skill in or knowledge of a trade or profession that is not expected of the average layperson and that will aid a court in determining the truth of a matter at trial
5. Anthropometry	e. Visual graphic display of speech
6. Polygraph	f. Application of science to the laws
7. Voiceprint	g. Describes the services of a crime laboratory
8. Criminalistics	h. States that, when two objects come into contact with each other, a cross-transfer of materials occurs

1. d (page 22)

2. h (page 8)

3. b (page 20)

4. f (page 2)

5. a (page 5)

6. c (page 16)

7. e (page 16)

8. g (page 3)

Level: Basic

### Chapter 1 Essay

1. List four major reasons for the increase in the number of crime laboratories in the United States since the 1960s.

Answer:

- The requirement to advise criminal suspects of their constitutional rights and their right of immediate access to counsel has almost eliminated confessions as a routine investigative tool
- The staggering increase in crime rates in the United States
- The fact that all illicit-drug seizures must be sent to a forensic laboratory for confirmatory chemical analysis before the case can be adjudicated in court
- The advent of DNA profiling

Objective: Account for the rapid growth of forensic laboratories in the past forty years.

Page numbers: 12–13

Level: Intermediate

2. List three advantages of having regional crime laboratories that operate as part of a statewide system.

Answer:

- Increases the accessibility of local law enforcement agencies to a crime laboratory
- Minimizes duplication of services
- Ensures maximum interlaboratory cooperation through sharing of expertise and equipment

Objective: Recognize the major contributors to the development of forensic science.

Page number: 13

Level: Intermediate

3. List the three basic functions of a forensic scientist.

Answer:

- Analyzing physical evidence
- Providing expert testimony
- Furnishing training in the proper recognition, collection, and preservation of physical evidence

Objective: Define forensic science and list the major disciplines it encompasses.

Page number: 20

Level: Basic

4. Discuss the major outcomes of the trials *Frye v. United States* and *Daubert v. Merrell Dow Pharmaceuticals, Inc.*



Answer should include points such as the following:

In *Frye v. United States*, the court ruled that, in order for expert testimony to be admitted at trial, a questioned procedure, technique, or principle must be “generally accepted” by a meaningful segment of the relevant scientific community.

In *Daubert v. Merrell Dow Pharmaceuticals*, the U.S. Supreme Court charged the trial judge with ensuring that an expert’s testimony rests on a reliable foundation and is relevant to the case.

Objective: Compare and contrast the *Frye* and *Daubert* decisions relating to the admissibility of scientific evidence in the courtroom.

Page numbers: 20, 21

Level: Difficult

5. What is the main difference between the testimony given by an expert witness and that given by a lay witness?

Answer should include points such as the following:

The ordinary or lay witness must give testimony that does not contain the personal opinions of the witness.

The expert witness may express his or her personal opinion as to the significance of specific findings.

Objective: Explain the role and responsibilities of the expert witness.

Page number: 24

Level: Intermediate

6. Describe the advantages of incorporating an evidence collection unit into the organizational structure of the crime laboratory.

Answer should include points such as the following:

Evidence technicians under the continuous direction of the crime laboratory are more likely to have received thorough training in the gathering of evidence at the crime site.

Evidence technicians who are continually exposed to the problems and techniques of the forensic scientist are better prepared to adopt new procedures or modify existing procedures to improve evidence collection.

Evidence technicians working out of the forensic laboratory will have at their disposal all the proper tools and supplies for proper collection and packaging of evidence for future scientific examination.

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page number: 25

Level: Intermediate

## **Chapter 1 Critical Thinking**

1. Describe the evidence to be collected and the specialists or crime laboratory units that would be needed to properly analyze the following crime scene to answer the given questions.

On Monday, September 26, 2011, a small airplane believed to be transporting members of a Mexican drug cartel and a shipment of drugs and firearms of unknown type or size recorded a short “mayday” call at 8:05 a.m. before crashing into a farmhouse in Laredo, Texas. Local police report that the abandoned farmhouse is frequented by homeless individuals, and there may have been several inside at the time of impact. On impact, the airplane’s nearly full gas tank caused a fire that incinerated those within the plane and those within the farmhouse.

The investigators need to deduce the following:

- a. How did the airplane malfunction to cause the crash?
- b. Who was on the airplane and in the farmhouse?
- c. What were the contents of the airplane’s cargo?

Answer should include points such as the following:

All evidence should be collected by the crime-scene unit or trained personnel.

- a. All available portions of the airplane should be collected and analyzed by a forensic engineer to acquire information about potential causes of the crash. The mayday signal should be recorded and analyzed by the voiceprint analysis unit to acquire information about potential causes of the crash. Samples of gasoline should be collected and analyzed by the physical science unit to to acquire information about potential causes of the crash.
- b. Any discovered remains should be collected and analyzed by a forensic odontologist to acquire information about the victims. Tissue from discovered remains should be collected and analyzed by the biology unit for blood type or DNA to acquire information about the victims.
- c. All available portions of the cargo materials should be collected. Potential drug evidence should be analyzed by the physical science unit, and potential firearms evidence should be analyzed by the firearms unit to acquire information about the contents of the airplane’s cargo.

Objective: Describe the services of a typical comprehensive crime laboratory in the criminal justice system.

Page numbers: 14–17

Level: Intermediate

2. For each of the early forensic science methods listed here, state the more recent technology or discipline that has taken its place in forensic science inquiry.

- a. Identification via anthropometry
- b. Firearms bullet and cartridge analysis via unassisted vision
- c. Identification via blood typing
- d. Poison identification via stomach content analysis
- e. Collections and analysis of evidence via untrained police officers

Answer:

- a. Fingerprinting

- b. Comparison microscope
- c. DNA
- d. Toxicology
- e. Crime-scene unit and crime laboratories

Objective: Recognize the major contributors to the development of forensic science.

Page numbers: 5, 7–10

Level: Basic