

# Lesson 1

## What is Forensic Science?

*Great are the works of the LORD, studied by all who delight in them (Psalm 111:2).*

### Terms to Know

**American Academy of Forensic Sciences (AAFS)** – outlines the roles of a forensic scientist as having the ability to distinguish relevant facts from random ones, conduct appropriate testing measures, develop hypotheses, and interpret these results in an attempt to “reach a conclusion or opinion” regarding the evidence’s relationship to the crime.<sup>1</sup>

**Criminalist** – a forensic science expert.

### Case Study

**Teacher:** Review the case study and discuss it with your student. Be sure to address any notes the student took, as well as sensitive or difficult topics you want to talk through with your student. This case should be very familiar! You may want to discuss some of the details surrounding the death and resurrection of Jesus Christ, as well as salvation.

**Student:** Review the case study. You can use this page to take notes on anything from the case that you have questions or concerns about. Discuss your thoughts with your teacher.

CASE STUDY





### Multiple Choice

Circle the best answer from the choices below.

1. Which of the following steps are included in forensic investigation?
  - a. Collection and examination of physical evidence
  - b. Interpretation of data
  - c. Drawing conclusions
  - d. Clear and concise reporting
  - e. Collaboration
  - f. All of the above
  
2. Which of the following qualifications are required to be a forensic expert? (There is more than one answer.)
  - a. College degree
  - b. Training
  - c. Certification
  - d. Expertise in all disciplines of forensic science
  - e. Professional speaking experience
  
3. The Latin root for the word science, *scientia*, means:
  - a. Study
  - b. Truth
  - c. Accuracy
  - d. Knowledge
  - e. None of the above
  
4. The Bible's historical record can be trusted:
  - a. In the New Testament only
  - b. Genesis 12 through the remainder of the Bible
  - c. From the very first verse in Genesis to last verse in Revelation
  - d. The Bible is a story and is therefore unreliable

### Short Answer

Respond to the following questions in complete sentences.

1. How does Psalm 111:2 apply to the study of science?

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2. What is the definition of forensic science? Include the Latin roots in your definition.

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3. How has the definition of science changed over time? Fill in the chart below.

1828	
1913	
2023	



### Multiple Choice

Circle the best answer from the choices below.

- Which of the following are fields of forensics expertise in the FBI? (There is more than one answer.)
  - Chemists
  - Toxicology
  - Fingerprints & Biometric Examiners
  - Cryptanalyst Forensic Examiner
  - Jurisprudence
- The earliest beginnings of the techniques we associate with forensic science can be traced to approximately:
  - 6,000 years ago
  - 300 B.C.
  - 1600s
  - 1800s
  - 1910

### Matching

Mark the letter in front of the best answer.

- |                    |                       |                           |
|--------------------|-----------------------|---------------------------|
| a. Sherman Osborne | b. Alphonse Bertillon | c. Edmond Locard          |
| d. Alec Jeffreys   | e. Sir Edward Henry   | f. Sir Arthur Conan Doyle |

- \_\_\_\_\_ Nicknamed the “Sherlock Holmes of France”
- \_\_\_\_\_ Father of document examination
- \_\_\_\_\_ Developed the testing necessary to process an individual’s DNA and create a DNA fingerprint
- \_\_\_\_\_ Father of poroscopy
- \_\_\_\_\_ Created a fictional character who sparked innovation in the physical world
- \_\_\_\_\_ Created a fingerprint classification system

## Short Answer

Respond to the following questions in complete sentences.

1. State Locard's Exchange Principle. Why is this principle the basis of forensic science?

a. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

b. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. What was the most important discovery of the past 100 years for forensic science?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. How did Alec Jeffreys advance this discovery from question 2?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_

4. What is the AAFS?

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**Unit Identification.** Using the following terms and descriptions, identify which investigative unit, according to the AAFS, that would analyze the evidence on the next page. (Some have more than one answer.)

*Anthropology:* the study of human biological and physiological characteristics and their development.

*Criminalistics:* the forensic analysis of physical evidence from a crime scene.

*Digital & Multimedia Sciences:* the forensic analysis of digital and multimedia evidence (e.g., network analysis, digitized evidence, analog and/or digital audio and video).

*Engineering & Applied Sciences:* the forensic analysis in the natural, physical, and forensic sciences (e.g., accident reconstruction, aviation incidences, and building accessibility).

*General:* the forensic analysis of accounting, art, consulting, pathology, crime scene, firearms, photograph, and veterinary.

*Jurisprudence:* the lawyers and judges involved in forensic cases.

*Forensic Nursing Science:* focuses on investigations and patient care.

*Odontology:* the study of forensic dentistry.

*Pathology/Biology:* the study of human remains and the life sciences (e.g., entomology, genetics, microbiology, ecology, and botany).

*Psychiatry & Behavioral Science:* the study of the human mind in relation to mental disorders, behavioral disorders, biological contributors, psychotherapeutic aspects, and social issues.










*Questioned Documents:* the analysis of handwriting, typewriting, office machine impressions, inks, papers, obliterations, and the recovery of latent print indentations.

*Toxicology:* the analysis of drugs and toxins postmortem, human performance, and general drug testing.

Anthropology  
 Engineering & Applied Sciences  
 Forensic Nursing Science  
 Psychiatry & Behavioral Science

Criminalistics  
 General  
 Odontology  
 Questioned Documents

Digital & Multimedia Sciences  
 Jurisprudence  
 Pathology/Biology  
 Toxicology

 <p style="text-align: center;">A</p>	 <p style="text-align: center;">B</p>	 <p style="text-align: center;">C</p>
 <p style="text-align: center;">D</p>	 <p style="text-align: center;">E</p>	 <p style="text-align: center;">F</p>
 <p style="text-align: center;">G</p>	 <p style="text-align: center;">H</p>	 <p style="text-align: center;">I</p>

**Optional Activity: Teacher's Discretion**  No  Yes Due Date: \_\_\_\_\_

Research a forensic career of interest. Is it offered in local, state, and/or national agencies? Identify the requirements necessary to apply, the salary range, and experience needed.





**Materials**

- A peer, parent, or sibling
- Metric measuring tape
- Pen or pencil

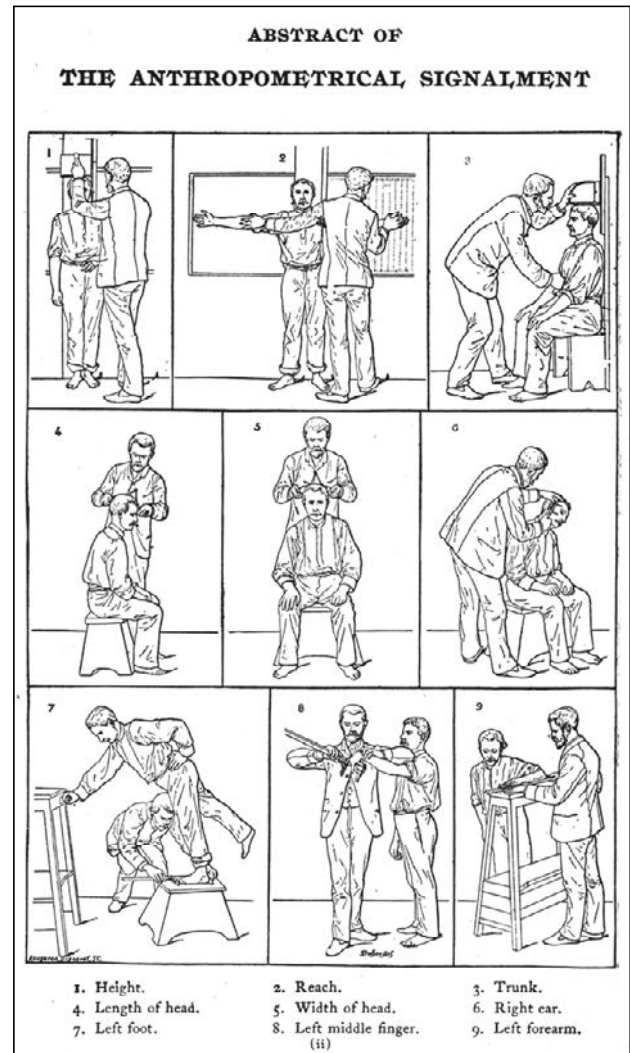
**Bertillon Classification: Anthropometry**

Alphonse Bertillon (1853–1914) was a pioneer in forensic investigation. Among his many accomplishments in the field, the one he is best known for is being the father of anthropometry classification. Anthropometry is defined as the scientific study of the measurements and proportions of the human body. While Bertillon was a clerk in the *Paris Prefecture de Police*, he developed a system of classification based on nine body measurements. This system allowed officers to distinguish between two different individuals. The classification system was so successful, the method was used in Europe and the United States in the early 1900s.

The chart (right) of nine body measurements was displayed in police departments.

Depending on the cooperation of the inmate, it would take approximately 45 minutes to one hour for officers to measure and process each inmate. The body measurements would then be recorded on an identification card.

You will now practice Bertillon’s system of anthropometry.



**Procedure**

1. Ask your partner to measure each of your nine body measurements, as accurately as possible, in centimeters. If you are unsure of what to measure, refer to the body measurement chart above.
2. Record your measurements below.

<ol style="list-style-type: none"> <li>1. Height: _____ cm</li> <li>2. Sitting height: _____ cm</li> <li>3. Length of outstretched arms from one index fingertip to the other: _____ cm</li> <li>4. Length of outstretched arm from shoulder to the index fingertip: _____ cm</li> <li>5. Length of lower arm from elbow to tip of the index finger: _____ cm</li> <li>6. Length of the right ear: _____ cm</li> <li>7. Length of head from front to back: _____ cm</li> <li>8. Circumference of the head: _____ cm</li> <li>9. Length of the left foot: _____ cm</li> </ol>
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3. You will now measure your partner's nine body measurements. Record these measurements below.

1. Height: \_\_\_\_\_ cm
2. Sitting height: \_\_\_\_\_ cm
3. Length of outstretched arms from one index fingertip to the other: \_\_\_\_\_ cm
4. Length of outstretched arm from shoulder to the index fingertip: \_\_\_\_\_ cm
5. Length of lower arm from elbow to tip of the index finger: \_\_\_\_\_ cm
6. Length of the right ear: \_\_\_\_\_ cm
7. Length of head from front to back: \_\_\_\_\_ cm
8. Circumference of the head: \_\_\_\_\_ cm
9. Length of the left foot: \_\_\_\_\_ cm

### Analysis Questions

1. Compare and contrast your measurements to those of your partner.

a. What differences can you identify?

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b. Do you feel the difference is significant enough to distinguish between the two of you?

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2. Look carefully at the measurement recorded in #5. What measurement used in the Book of Genesis in the Bible does this refer to?

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3. What limitations do you see with this system of classification?

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