

## Unit One

1. Understand the CSI effect?
  - a. What are the arguments that the effect exists? What are the arguments that it does not exist?
  - b. In what ways does it affect prosecutors? Defensive attorneys?
  - c. What are some ways it can be negated?
  - d. The main complaint about CSI is that it shows the science as completely certain---based on the podcast we listened to, why is potentially harmful?
2. Be able to perform deductive reasoning. (1 question includes a reading passage)
3. Know the characteristics of each forensic branch or division as described in the **career powerpoint**.
4. Review your notes from **Ch. 1 "introduction"**. Pay extra attention to :
  - a. Frye Standard
  - b. Locard's Exchange principle
  - c. History of the crime lab
  - d. Services provided by the crime lab (essential vs. optional)
  - e. Three functions of a forensic scientist
  - f. Crime triangle
5. Review your notes from **eye witness testimony**.
6. Be able to explain the cross race effect.
7. **Major players in forensics and their contributions.**

## Crime Scene Unit

1. Review your **crime scene notes**
  - a. Know the different search patterns, the benefits and drawbacks of each, and when to use which one.
  - b. Know the procedure for photographing a crime scene
  - c. Know appropriate methods of packaging material based on type
  - d. Know the ways of recording a crime scene (and the requirements of each) and which are primary ways
  - e. Know the steps of processing a crime scene
  - f. Know substrate control and reference sample
  - g. Know the difference between primary and secondary transfer
  - h. Know the difference between a primary crime scene and a secondary crime scene
  - i. Know the amendment protecting from warrantless search and the reasons why a warrantless search can be conducted
2. Know the different types of evidence and how they relate to each other (direct vs. circumstantial; class vs. individual)
3. Review over the vocabulary from this section

## Fingerprinting Unit

1. **Review all three sets of fingerprinting notes**
2. Know the three principles of fingerprinting
3. Know and be able to classify prints based on patterns
4. Know the characteristics of each pattern (ridge pattern and deltas\_
5. Know the general frequency of loops, whorls, and arches
6. Know and be able to recognize the different types of ridge characteristics
7. Know what causes us to make fingerprints
8. Know the legal requirements for fingerprint evidence

## DNA

1. Who is responsible for the beginning of Forensic DNA testing?
2. What does DNA stand for?
3. Where in your body is DNA located?
4. What are the two sources of DNA in your cells?
5. What are the three parts of a DNA molecule?
6. Draw a basic DNA structure and label each part.
7. What is meant by the "Base pairing rule"?
8. What enzyme is responsible for replicating DNA in the body?
9. Explain semi-conservative replication.
10. How many chromosomes are in each normal cell in your body?
11. How many copies of each chromosome are in your cell?
12. How many copies of each chromosome are in a sex cell?
13. What holds the sides of the DNA ladder together?
14. What are chromosomes made of?
15. Where are chromosomes found in the cell?
16. How many base pairs are in the Human genome?
17. About how many base pairs would be different comparing two individuals?
18. Each gene codes for a specific \_\_\_\_\_.
19. Genes are located on \_\_\_\_\_.
20. How many copies of each gene do we inherit?
21. What is an allele?
22. If you have two of the same allele you are?
23. If you have two different alleles you are?
24. Draw an example of a tandem repeat.
25. What is VNTR stand for?
26. Give the benefits of nuclear DNA and the benefits of mitochondrial DNA.
27. How do you package DNA samples?
28. What is the main problem in DNA testing?
29. What is the purpose of a restriction enzyme?
30. What is the oldest type of DNA testing?
31. Which requires more DNA (RFLP/STR)?
32. DNA segments move through an electrophoresis gel based on what two things?
33. What chemical is used to cause DNA to glow?
34. What is the purpose of a PCR machine?
35. What enzyme does PCR use and where does it come from?
36. What are the steps of PCR?
37. What does STR stand for?
38. How many STRs are used to make CODIS?
39. What is CODIS?
40. What are the 2 uses of CODIS?
41. Explain how the amelogenin gene can be used to determine sex?
42. What is Y-STR testing and why is it beneficial?
43. According to "DNA Untwisted" what are the terms "dna fingerprinting" and "dna match" not really correct?

### FROM THE MCWANE LAB

44. What is the purpose of the primer?
45. Why do we use a DNA marker?
46. How many cycles of PCR did we run?
47. How many bands would be seen in a homozygous individual?
48. From what organism does Taq polymerase come from?
49. What kind of charge does DNA have?
50. Be able to interpret gel results.

**Be able to work a deductive reasoning problem.**

## DOCUMENT ANALYSIS

- Study the Document Analysis notes (the powerpoint is online)
  - Be able to fully explain the process of getting a reference sample.
  - Know the terms: graphologist, linguist, and document examiner.
  - What are the areas of document analysis?
  - What are the goals on document analysis?
  - What is the most common type of analysis?
  - Know and understand the relationship between forgery and fraud.
  - Know what characteristics can be used to analysis paper and pencil.
- Handwriting Analysis (in powerpoint)
  - Make sure you know what each of the 12 characteristics means?
- Ink Analysis
  - Know the different types of chromatography and the strengths/weaknesses of each.
- Currency
  - How does a counterfeiting detection marker work?
  - Who investigates the counterfeiting of US currency?
    - What is FISH and what does it do?
  - Know the security features on new currency.
    - What feature is the best and why?
- Ciphers
  - Be familiar with frequency analysis.
    - What letters are most and least common?