

## 2<sup>nd</sup> Semester Forensics Review- Digital Learning

This review is designed to help you study for your final exam scheduled for May 8<sup>th</sup> from 10:30 am- 12:00 pm (noon). This review is completely optional and does not need to be completed. This review is not worth any bonus points and will not be accepted for any credit. It is merely a guide to help you review all the material we have covered this semester and that you are responsible for knowing for the final exam. Study hard!

Questions:

### Death and Forensic Anthropology

1. What is the primary objective of an autopsy?
2. Describe the difference between cause of death, mechanism of death, and manner of death.
3. List the 5 different manners of death.
4. What is the most common manner of death?
5. True or False: The outward appearance of the injuries will always match the injuries sustained inside the body.
6. Define livor mortis
7. Define algor mortis
8. Define rigor mortis
9. List 3 factors that affect the rate of rigor mortis.
10. True or False: Different lividity patterns on a body may indicate that the body was moved after death but before livor mortis had fully fixed.
11. Describe the process of using ocular fluid to determine a time of death.
12. Create a Venn diagram to compare and contrast the skeletal remains of a typical male and female. Must have a minimum of 10 criteria to receive credit.
13. Create a Venn diagram to compare and contrast the skeletal remains of a typical 5'8" 14-year-old Caucasoid male and a typical 5'8" 18-year-old Caucasoid male. Must have a minimum of 10 criteria to receive credit.
14. Describe the process of using stomach contents to determine a time of death.
15. Rigor mortis, livor mortis, and algor mortis are all used to help determine time of death. However, each method has its limitations. For each method, describe at least one condition that would render that method unsuitable or inaccurate for determining time of death.
16. Identify a reasonable manner of death for each of the following situations:
  - a. A contact wound to the back of the head
  - b. An elevated carbon monoxide level in the blood of a fire victim
  - c. Bruising in the shape of handprints on the neck of a victim
  - d. Death by overdose of a first-time alcohol user
  - e. A gunshot wound to the chest from a distance of 3 feet
  - f. Sudden death of a young chronic opioid user
17. If a person has been dead for approximately 2 days. List the four signs of decomposition you would expect to see.
18. You find a body with no evidence of rigor mortis. Assuming normal conditions, how long may this individual have been dead? Explain your how you reached this answer.
19. You find a body in full rigor mortis except for the head/face. Assuming normal conditions, approximately how long has this individual been dead? Explain your how you reached this answer.
20. You find a body that contains split open blowfly pupa cases and adult blowflies. Assuming normal conditions, approximately how long has this body been dead?
21. Approximately how long has the victim been dead if his body temperature was 88.7° F when he was found? Assume normal conditions. You must show all your work to get credit for this problem.

22. Approximately how long has the victim been dead if his body temperature was 61.6° F when he was found? Assume normal conditions. You must show all your work to get credit for this problem.

### Soil, Impressions, and Tool marks

23. List 3 factors that influence soil production
24. List 3 factors that might personalize your footwear
25. What are the two forces that form sand? Which forms sand quicker? Why?
26. List the 3 main grain sizes
27. List the 3 subcategories of soil
28. List 3 factors that will influence the pH of the soil
29. What are the two parts of a tire's surface divided into?
30. What are the four sources of sand? What is the composition of each of those types of sand? What are the identifying features of each of these types of sand?
31. True or False: Forms of impression evidence may constitute evidence at a crime scene include shoe, tire, and fabric impressions.
32. List the 6 soil horizons in order from top to bottom. Include a description of each soil horizon.
33. List and describe the three different types of impressions
34. List and describe the three basic types of tire marks
35. List and describe the three categories of tool marks
36. Can a tool mark on its own be matched to a specific person? Why or why not?
37. Answer the following questions using the table below:

Surface Type	Drag Factor
Cement	0.90
Asphalt	0.75
Gravel	0.60
Ice	0.10
Snow	0.30

- a. On a cement surface, a vehicles leaves four skid marks. The skid marks were 50 ft, 54 ft, 58 ft, and 56 ft. Determine the speed of the vehicle.
- b. A car leaves four skip skid marks on asphalt. What speed was the car going? Mark 1: 5ft, 7 ft, 8 ft, 6 ft. Mark 2: 7 ft, 6 ft, 9 ft, 6 ft. Mark 3: 4 ft, 8 ft, 7 ft, 7 ft. Mark 4: 8 ft, 8 ft, 5 ft, 4 ft.
38. How would you go about collection impressions in each of the following situations:
- a. You discover a shoe print in dry dirt
- b. You discover a tool mark on a windowsill
- c. You discover a tire mark in soft earth
- d. You discover a shoe print on a loose piece of tile
- e. You discover a very faint shoe print in dust on a colored linoleum floor

### Ballistics

39. True or False: Unlike other areas of criminalistics, the goal of individualization is not yet a reality in firearm and tool mark examination.
40. True or False: Rifled barrels manufactured in succession will have identical striation markings
41. What is rifling, and what is its purpose?
42. What are lands and grooves?

43. What is caliber?
44. What are striations? How are they produced?
45. How are striations useful in comparing bullets?
46. Describe the sequence of events that occur from the time the trigger of a firearm is pulled to the time the bullet exits the barrel of the gun.
47. What is trajectory?
48. List 5 class characteristics of bullets
49. List 4 class characteristics of cartridge cases
50. List 4 individual characteristics of cartridge cases
51. Describe the process for determining the height of a shooter.
52. How would you use gunshot residue to determine the distance of a shooter?
53. Give two ways to determine exit vs entrance room. Explain how you would use each.
54. A victim was shot from a bullet that came through his driver's side car window. The distance from the bullet hole to the ground was 4 feet. The angle of impact was determined to be 2 degrees. A witness show a muzzle flash from an area located approximately 40 feet away from the car. What height was the shooter? Show all your work to receive credit.
55. A witness saw a victim fall while riding his bike. The cyclist had been struck in the head by a bullet. When the crime scene investigators arrived, they estimated that angle of impact to be about 24 degrees based on the hole in his helmet and the entry wound in his head. The distance from his head to the building the shooting reportedly came from is 152 feet. The height from the ground to the entry wound on the victim while on his bike measured 6 feet above the ground. At what height did the shot come from? Show all your work to receive credit.

### Documents and Glass

56. True or False: Because people sign their names the same way every time. If an original signature was traced over, the handwriting examiner would have to conclude that the tracing was produced by the signer of the original.
57. True or False: A single handwriting characteristic can by itself be taken as a basis for a positive comparison.
58. What is a questioned document?
59. Name 6 different characteristics of handwriting one might expect to encounter variations between individuals. Give a brief description of each.
60. Describe two situations in which a document examiner may be prevented from coming to a positive conclusion about a questioned document.
61. What are exemplars? Why are they important for a document examination?
62. Criminalist Julie Sandel is investigating a series of threatening notes written in pencil and sent to a local politician. A suspect is arrested and Julie directs the suspect to prepare writing samples to compare to the writing on the notes. She has the suspect sit at a desk in an empty office and gives him a pen and a pieces of paper. She begins to read one of the notes and asks the suspect to write the words she dictates. After reading about half a page, she stops, then dictates the same part of the note a second time. At one point, the suspect indicates that he does not know how to spell one of the words, so Julie spells it for him. After completing the task, Julie takes the original notes and the dictated writing from the suspect to a document examiner. What mistakes did Julie make?
63. You have been asked to determine whether a handwritten will, supposedly prepared 30 years ago, is authentic or a modern forgery. What aspects of the document would you examine to make this determination?
64. Biometric signature pads learn to recognize how a person signs his or her name based \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

65. What is the difference between forgery and fraudulence
66. Why do paper bills feel different from regular paper?
67. List 3 examples of check forgery.
68. List 5 methods used to prevent check forgery
69. You find a new series bill and you think it might be counterfeit. List 10 characteristics you could look for to determine if the bill was counterfeit or not.
70. List the 3 primary ingredients in glass.
71. How is the density of glass calculated? Describe how you would get each of the variables.
72. Describe the process of determining which order a series of breaks in glass occurred in.
73. What are the types of fracture patterns on glass? Describe each.
74. Describe how you can use conchoidal lines to determine which side of the glass a hit came from.
75. Describe the two different methods for determine the refractive index of a piece of glass.
76. True or False: The physical properties of density and refractive index are used most successfully for characterizing glass particles.
77. True or False: A significant difference in either density or refractive index proves that the glasses examine have a common origin.
78. What is the main ingredient in ordinary glass?
79. Why is the glass used in automobiles different from the glass used in windows?
80. What is the only way to individualize glass fragments found at a crime scene to a single source?

### **Arson and Criminal Profiling**

81. True or False: The flash point of a liquid fuel is the highest temperature at which a liquid gives off sufficient vapor to form a mixture with air that will support combustion.
82. What is oxidation?
83. What is combustion?
84. How does an exothermic reaction differ from an endothermic reaction?
85. What are the four components for the fire tetrahedron?
86. What is pyrolysis? How does pyrolysis produce fire?
87. List 5 different burn patterns that may be observed at a fire. Describe each, and describe what it can tell fire investigators.
88. What is headspace? Describe the two methods for collecting evidence from headspace.
89. Why should fire evidence be packaged in air tight containers?
90. What are the four categories of fire? Describe each.
91. Compare and contrast historical criminal profiling and modern criminal profiling.
92. List the 6 stages of a criminal profiling process. Describe each.
93. Discuss how a victim's level of risk affects criminal behavior. Write a short scenario in which each level of risk is represented.
94. Explain the difference between a serial crime and a crime spree. Give a brief example of each.
95. How do profilers use MOs and signatures to identify suspects? Give a brief example of each.