CSI Web Adventure:
Case One: Rookie Training

Part 1 – Forensic Biology

Part I. Go to the “Forensic Biology” section and choose “Follow Greg” to answer these questions.

A. Explore the Lab

**Click on the Microscope:**
1. What are they looking for? ____________________________

**Click on the Test Tubes:**
2. What do they contain? ____________________________
3. What does the abbreviation DNA represent? ____________
4. Where is the DNA located in a cell? _________________
5. What do the above results tell you about DNA? Select the 3 correct answers:

**Learn About Twins**
6. What are **fraternal twins**? Do they have the same DNA?

7. What are **identical twins**? Do they have the same DNA?

8. How can forensic scientists use DNA in a crime?

9. Which suspect matches the sample from the crime scene? What does that mean?

**Click on the Forensic Analyzer:**
10. What is the Forensic Analyzer used for? ______________
11. What are the four steps in processing DNA? Briefly explain what happens at each step.
**Process Greg’s DNA for practice**

12. What is a buccal swab?

13. What are buccal swabs collected?

Extract:

14. What does *lyse* mean?

Amplify:

15. What does *PCR* mean? What does it allow?

16. Why do you think they need many copies of the DNA markers?

17. What percent of a person’s DNA do the markers make up?

Separate:

18. How does the DNA fragments separate through the gel?

Analyze:

19. What is formed each time a group of DNA fragments exits the gel and is scanned by the laser?

20. Which appears first on the graph?

21. How many separate markers does each DNA sample contain?

22. Determine which of the 3 is identical to the processed profile?

23. Why would C.S.I. Greg Sanders’ DNA profile be on record in the local DNA database?

**Click on the Computer Database:**

24. Complete: A DNA profile is a ____________________________ of one person’s genetic information.

25. What does CODIS represent?

26. Why do you think most markers in the profile have 2 different peaks?

**Complete the Exit Exam.**

27. How many markers are in a DNA profile?

28. Which of the following would not contain DNA?

29. ___________ twins have the exact same DNA.

30. Which of the following is NOT a step in processing DNA?

31. DNA Challenge: Which person’s DNA profile matches the DNA found at the scene?
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Part 2 – Toxicology

Part II. Go to the “Toxicology Lab” section and choose “Learn About the Lab” to answer these questions.
1. What do forensic toxicologists test?

2. What do specialists in drug chemistry analyze?

3. How much of each is needed for testing?
   _______ of vitreous humor, _______ of blood, and _______ of urine

4. What is vitreous humor? (view the clip)

5. How does the medical examiner collect urine?

6. What does post mortem mean?

7. Why are maggots analyzed? (view the clip)

8. Why are stomach contents analyzed?

9. What would it mean if a chemical was found in the blood but not in the stomach?

10. Why do toxicologists analyze so many different bodily fluids?

11. How long has the study of toxicology been around?

12. Who and when 1st realized that literally anything can kill a human if taken in too big a quantity? What saying did he make up?

13. When was forensic toxicology invented and by whom?

Go to Evidence Reception:
14. Sort the items: What was your 1st time? ___________ best time? ___________
**Begin Screening Tests:**

15. What instrument is used for screening alcohol? __________________________

16. What does the headspace mean?

17. Was there alcohol in the bloodstream? _____ Yes _____ No _____ Not sure

18. What does an ELISA test analyze?

19. Can the ELISA test identify specific chemicals? ________________

**Click on the computer screen:**

20. According to the results where are any drugs in the driver’s system? If so what types?

21. What do confirmatory tests like gas chromatography/Mass spectrometers (GC/MS) do?

22. What does the GC/MS instrument do?

23. How long can it take the GC/MS to finish processing a sample? ______________________

**GC/MS – How it Works:**

24. What happens in the ion source?

25. What happens in the analyzer?

26. What happens in the detector?

27. What is generated for each chemical found? __________________________

28. What chemicals were found in the blood sample? ______________________ and ______________________

29. What effects does the second drug have on a person?

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*Take the Recruiting Program survey by clicking on the computer.*

30. What are your results?
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Part 3 – Firearms & Tool Marks

Part III. Go to the “Firearms & Tool Marks” section and choose “Training Demos” to answer the following.

A. Parts of a Gun

1. What is a semiautomatic handgun?

2. What is the magazine? What can it leave?

3. What is the firing pin? What can it leave?

4. What is the slide?

5. What is the barrel?

6. What is rifling? What is its purpose?

7. What does rifling do to the bullet?

B. Part of a Cartridge

8. What is a cartridge? What 4 things make it up?

9. What is a “blank” cartridge? ______________________________________________________

10. What is a projectile?

11. What is a caliber?

12. What is the cartridge case?
13. What is the primer and how does it work?

14. What do we commonly call the propellant? __________________________

15. What is the empty, used cartridge called? __________________________

16. What does the smokeless gunpowder do?

C. Bullet Characteristics

17. What term refers to tiny, microscopic scratches on the surface of a bullet? __________________________

18. What is a rifling impression?

19. What is a conventional impression?

20. What is a polygonal impression?

21. What is the rifling number?

22. What is the rifling direction? How is it determined?

Go to the Firing Range – Answer the questions by “shooting” the correct answers.

Answers:

23. A __________________________ is a complete unit of ammunition made up of a cartridge case, a projectile, and a propellant. Lay people may call it a “round.”

24. A bullet exits the gun though the ______________.

25. A bullet’s caliber is determined by its _________________.

26. Spiral grooves carved inside the barrel of a gun that make the bullet spin in the air are called ____________.

27. The ________________ hits the primer of a cartridge and initiates firing the bullet.

28. __________________________ is a chemical that explodes when stuck by the firing pin. It sets off the gunpowder which fires the projectile.

29. A bullet is a type of _________________.

What was your score? __________
Evidence Analysis – An innocent bystander was caught in the crossfire between 4 gang members. Solve the case.

30. What is a bullet’s caliber classified as? ________________________________

31. What is the caliber of the bullet? ________________________________

32. Circle one: The bullet has  Conventional Rifling  or  Polygonal Rifling

33. Determine the rifling number. (remember to rotate the bullet to get the complete count) _______

34. What type of gun was used to shoot this bullet? ________________________________

Use the Comparison Microscope to match the rifling and determine which suspect shot the bystander.

35. Which suspect’s gun was used to shoot the bullet? ________________________________
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Part 4 – Medical Examiner

Part IV. Choose the “Medical Examiner” section to answer these questions.

1. What is the first thing an examiner does when a person arrives for autopsy? __________________________

2. What is the next step? __________________________

A. Practice the autopsy and follow the directions to complete it.

3. List the 3 protective garments to wear:

4. Choose the tool to being cutting: __________________________

5. Choose the tool to remove the rib cage: __________________________

6. Choose the tool to sample blood: __________________________

7. What is the Rokitansky’s technique?

8. Choose the tool to cut the organs loose: __________________________

9. Select the instrument for exposing the skull: __________________________

10. What is an aneurysm?

11. What is the definition of “cause of death”? 

12. What is the definition of the “manner of death”?

13. Briefly describe the 5 manners of death: (include the percent of cases seen in autopsies)

   a.

   b.

   c.

   d.

   e.
14. What was the manner of death in this case? ______________________________

15. What was the cause of death in this case? ___________________________-________________________

16. What was the manner of death for each case?
#6877 _____________________ #11989 _____________________ #23380 _____________________
#4775 _____________________ #94575 _____________________

Click back Home, reselect Medical Examiner and quickly go through the next 3 slides until you can choose Skip the Autopsy.

B. Determining the Time of Death
7 clues:
Clues 1-3 on The body:
17. What is algor mortis?

(Click on algor mortis)
18. Where is the thermometer normally inserted? ______________________________
19. Approximately the body cools at approximately ____________ per hour.
20. How long ago did the man die? ______________________________
21. Having the body in a hot car would have: ______________________________

22. What is rigor mortis?

23. When does rigor mortis disappear? ______________________________
24. When does rigor mortis set in? ______________________________
25. At what point is rigor mortis full on? ______________________________
26. At what point has rigor mortis disappeared? ______________________________
27. Based on this information, determine how long ago the victim died.

28. What is livor mortis?

29. Where would you most likely find livor mortis in this particular victim if he was seated, slumped forward?

30. According to the livor mortis determine when he died.
Clue 4-Coffee cup:
   31. What does the coffee cup tell you?

Clue 5-Newspaper:
   32. What does the newspaper tell you?

Clue 6-Clock:
   32. What does the clock tell you?

Clue 7-Automobile hood
   33. The hood of the car was cool to the touch. What does this tell you?

   34. Based on the information you collected when do you think the time of death was if the car was first reported at 2:15 pm and the ME was on the scene by 2:30 pm?

*Click on the Exit X to leave this portion.*
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Part 5 – CSI Ethics

Part V. Choose the “CSI Ethics” section to answer these questions.
40. Forensic scientists must be:
   __________________, __________________, __________________, and __________________.

Answer the questions to finish this section.

Code of Ethics 1
   ___ a. Give up
   ___ b. Keep processing- hopefully you’ll find some prints soon.
   ___ c. Stop processing and find a better way to do this

Code of Ethics 2
   ___ a. Tell the police what they want to hear
   ___ b. Tell the truth
   ___ c. Alter the gun

Code of Ethics 3
   ___ a. Don’t go
   ___ b. Go to the house and collect evidence
   ___ c. Ask to see a search warrant before collecting evidence

Code of Ethics 4
   ___ a. Follow his lead and not mention it.
   ___ b. Talk about the 2nd DNA sample during your testimony
   ___ c. Talk about your concerns with the prosecutor’s boss.