MESA DAY 2026-2027

SCIENCE LAB BOOK REQUIREMENT
CRIME SCENE SCIENCE
High School SCHOOL TEMPLATE

NAMES:_____
(team member names)

SCHOOL:_____

CENTER: _____

LEVEL (circle one): 9/10th gr 11/12th gr

*Changes, if any, are highlighted in "yellow."

Investigation Process - 7 Points

1. Number following crime scene investigation steps in the correct order from first to last. *(6 points)*

___ Collect evidence
___ Secure and isolate the scene
___ Conduct a primary survey
___ Document the scene
___ Conduct a secondary survey
___ Evaluate/reconstruct the scene

2. Why is following an established sequence important when processing a crime scene? *(1 point)*

A. It guarantees that every suspect will be identified.
B. It allows investigators to skip documentation.
C. It ensures all evidence has equal importance.
D. It reduces the risk of evidence being lost, altered, or contaminated.

Finger Prints - 5 Points

3. Match each fingerprint description with its basic pattern. *(5 points)*

___ Ridges enter from one side, curve, and generally exit the same side. ___ Ridges enter from one side and generally exit the other side. ___ Ridges form circular or spiral patterns.	A. Arch B. Loop C. Whorl

4. Lift your own fingerprint using a pencil and tape. Attach or draw a representation of your fingerprint and correctly identify the fingerprint pattern as an arch, loop, or whorl. *(2 points)*

DNA Structure — 8 Points

5. Sketch a DNA molecule and correctly label the following parts. *(7 points, 1 point each)*

	Adenine Thymine Guanine Cytosine Sugar-phosphate backbone 5’ end 3’ end

6. Which statement correctly describes the two strands of DNA? *(1 point)*

A. One strand runs 5′ to 3′ while the other runs 3′ to 5′.
B. DNA strands have no directionality.
C. Only one strand contains nitrogenous bases.
D. Both strands run 5′ to 3′ in the same direction.

Forensic Evidence — 6 Points

7. Classify each example as physical evidence or testimonial evidence. *(4 points, 1 point each)*

Evidence	Physical	Testimonial
a. Fingerprint recovered from a window		
b. Witness reports seeing someone leave		
c. Fiber recovered from a jacket		
d. Suspect describes where they were		

8. Which situation **BEST** demonstrates Locard's Exchange Principle? *(1 point)*

A. A detective interviews two witnesses.
B. An investigator photographs a footprint.
C. A suspect leaves fibers on a chair and carries fibers from the chair away on their clothing.

9. Which of the following is trace evidence? *(1 point)*

A. Written confession
B. Hair recovered from clothing
C. Security video
D. Witness statement

Measurements and Analysis — 6 Points

10. A footprint recovered at a crime scene measures 28 cm. Using the provided forensic reference or formula, calculate the estimated height of the person. (4 points)

Show your calculation:

Estimated height: _____ cm

11. Why should investigators **NOT** use estimated height from a footprint as the only evidence identifying a suspect? *(2 points)*

A. Footprints cannot be measured accurately.
B. Height cannot be estimated from footprints.
C. Many people may fall within the same estimated height range.
D. Footprints only provide DNA evidence.

Hair and Fiber Evidence — 4 Points

12. A fiber recovered from a crime scene has irregular twists and a flattened appearance. A second fiber is smooth and uniform. Which characteristic would be most useful when comparing the samples? *(2 points)*

A. Their microscopic structure
B. The investigator who collected them
C. The size of the evidence bag
D. The location of the laboratory

13. A crime scene fiber and a suspect's clothing fiber have similar color and microscopic characteristics. What is the BEST conclusion? *(2 points)*

A. The suspect definitely committed the crime.
B. The fibers prove they came from exactly the same garment.
C. Fiber evidence cannot be useful in an investigation.
D. The fibers are consistent with one another but do not by themselves identify an individual.

Biological/DNA Evidence — 8 Points

Use the DNA profile below to answer Questions 14–15.

Sample	Locust 1	Locust 2
Crime Scene	8, 12	14, 16
Suspect A	8, 12	14, 16
Suspect B	8, 10	14, 16
Suspect C	8, 12	12, 18

14. Which suspect cannot be excluded based on this DNA profile? *(4 points)*

A. Suspect B
B. Suspect A
C. Suspect C
D. All three suspects

15. Which statement BEST describes the role of this DNA evidence? *(4 points)*

A. DNA profiles determine when a person was at a crime scene.
B. DNA evidence makes all other evidence unnecessary.
C. The profile can be compared with known samples as part of the investigation.
D. DNA proves why a person was at a crime scene.

Microscope Use and Analysis — 6 Points

16. When beginning to view a specimen under a microscope, which objective lens should generally be used first? *(1 point)*

A. Lowest-power objective
B. Highest-power objective
C. Any objective
D. The eyepiece only

17. After switching from a lower-power objective to a higher-power objective, what happens to the field of view? *(1 point)*

A. The specimen becomes physically larger.
B. It becomes smaller.
C. It becomes larger.
D. It remains the same.

18. Which microscope component is used to adjust the amount of light passing through a specimen? (1 point)

A. Stage clips
B. Arm
C. Diaphragm
D. Eyepiece

19. A specimen appears blurry after switching to a higher-power objective. Which adjustment should generally be used to sharpen the image? *(1 point)*

A. Fine adjustment knob
B. Stage clips
C. On/off switch
D. Arm

20. Why should a specimen be centered in the field of view before switching to a higher-power objective? *(1 point)*

A. Higher magnification changes the location of the specimen.
B. The specimen becomes physically smaller.
C. Centering increases the amount of light produced by the microscope.
D. The field of view becomes smaller at higher magnification.

21. Why might a forensic scientist examine a hair or fiber under different magnifications? *(1 point)*

A. To permanently enlarge the sample.
B. To determine exactly who left the sample.
C. To observe both its overall structure and smaller distinguishing characteristics.
D. To change the chemical composition of the sample.