Preparing a Crime Scene Investigation
UNIT GOAL

The student will be able to summarize a process for preparing a crime scene investigation

A. Organizing a plan of action

1) Mentally reconstruct the crime based on:
   a) Information from the responding officer (s).
   - Your best source for initial information
   b) Quick observation/scan of the scene.
   a) Physical evidence that is in plain view.

Based on a mental reconstruction, establish an organized plan of action.

Basic guideline include:
1. Assign one person to be in charge.

2. Establish a command post.

3. Task assignments should be disseminated in writing.

Verbal direction may be misinterpreted or simply disregarded.

4. Personnel given assigned tasks must be made aware of the specifics of their assignments; no assumptions can exist in this area.

5. Trading of assignments should not be permitted without authorization by the officer in charge.

6. Utilize a systematic checklist or other method to insure a duplication of job effort is avoided.

7. Make assignments concurrent with the aptitude and training of the personnel involved.
8. Do not permit personnel to begin the search until a briefing has been conducted describing the goals and direction of the search to all persons involved.

9. Make no inferences that one duty is of greater or lesser significance than other tasks.

10. **Written reports are to be submitted by all personnel involved**

11. Ensure that agreements with all agencies in multi-jurisdictional crime scene searches are coordinated.
Establishing a command post and a search team

Establish a command post and assemble personnel outside the area to be searched.

This command center can also be used for providing protective gear and wardrobe, special equipment, food and shelter, medical assistance, duty/shift assignments, and security to personnel.

In order to resolve any questions during the crime scene search, establish contact between medical examiners, laboratory personnel, and the prospective attorney (CA – DA).
1. Basic information on the crime that was committed.
2. The type of materials to be sought and reasons.
3. The search method(s) to be used.

A careful and thorough search must be emphasized to the search party.

- A defeatist attitude is contagious and results in a poor search.
Emphasize:

1. That evidence will always be located if the time and effort are expended in a methodical manner.

2. That nothing is to be excluded from consideration and the search will not be concluded until personnel are certain all possibilities have been explored.

3. Extensive/detailed note taking.

Remind the party to proceed with:

- Caution.
- Coordinated movements.
Communication, between the search parties and the commander is essential. A chain of command must be established and maintained.
The supervisor's responsibility is to ensure a complete, thorough and careful search of all areas.

This may require a **recheck** of areas previously covered.

1. An effective procedure for rechecking is to:
   a. Alternate search groups.
   b. Alternate searchers within the groups.
Determining the search method and a starting point of the search.

- Consider the size and type of area to be searched.
- Consider personnel and equipment necessary and available.
- Indoor scenes, depending on their size and content, usually require only a 2-person team.
- Outdoor scenes, performed by two or more individuals, are more effective as long as the search is well organized.
Consider the degree of thoroughness required depending on:

b. Physical evidence sought.
c. Purpose of the search.
Since all crime scenes are unique in circumstances and characteristics there can be no set procedure that will apply in each search. Each scene must be studied and thoroughly planned to ensure complete coverage of the search area.
The various types of search methods.

Strip or line search.

Circular (spiral or concentric) search.

Quadrant, sector, or zone search.

Elevation Zone Search
Strip or Line search.

Single strip search.

Double strip (grid) search.
Another example of a strip search.

Another example of a grid search.
Circular (spiral or concentric) search.

1. This type of search is useful when an item is missing from the center and the search must be conducted rapidly.

2. The search may begin in the inside working outward, or vise-versa as the circumstances dictate.
Quadrant, Sector, or Zone Search.

1. This type of search is effective for indoor and outdoor scenes that have regular patterns or defined borders.

2. This type of search also permits different types of searches in the different sectors.

   a. Subdivide the scene into areas or sectors, such as dividing:

      (1) A building into rooms.

      (2) A bookshelf into sections.

      (3) A vehicle into sections.
Elevation Zone Search

1. Floor to waist
2. Waist to chin
3. To ceiling
4. False ceiling
The Team Leader should observe and supervise the search while other team members perform the search. With an overlapping search, items are unlikely to be missed.
Some investigative tools and equipment that are recommended for performing crime scene searches.

1. Gloves (Universal Precautions).
2. Writing implements (pens, pencils, markers).
4. Communication equipment (cell phone, pager, radio).
5. Flashlight.
7. Camera – 35mm (with extra batteries, film, etc.).
8. Investigative notebook (for scene notes, etc.).
9. Measurement instruments (tape measure, ruler, rolling measuring tape, etc.).
11. Watch.
12. Paper bags (for hands, feet, etc.).
13. Specimen containers (for evidence items and toxicology specimens).
15. Departmental scene forms.
16. Camera with flash.
17. Blood collection tubes (syringes and needles).
18. Inventory lists (clothes, drugs, etc.).
20. Clean white linen sheet (stored in plastic bag).
21. Evidence tape, seals and identifier.
22. Four-weather gear (raincoat, umbrella, etc.).
23. Medical equipment kit (scissors, forceps, tweezers, exposure suit, scalpel handle, blades, disposable syringe, large gauge needles, cotton-tipped swabs, etc.).
24. Phone listing (important phone numbers).
25. Tape or rubber bands.
26. Disposable (paper) jumpsuits, hair covers, face shield, etc.
27. Evidence seal (use with body bags/locks).
28. Pocketknife.
29. Shoe covers.
30. Trace evidence kit (tape, etc.).
31. Waterless hand wash.
32. Thermometer.
33. Crime scene tape.
34. First aid kit.
35. Latent print kit.
36. Local maps.
37. Plastic trash bags.
38. Gunshot residue analysis kits (SEM/EDS).
39. Photo placards (signage to ID case in photo).
40. Boots (for wet conditions, construction sites, etc.).
41. Hand lens (magnifying glass).
42. Portable electric area lighting.
43. Barrier sheeting aka, privacy screens (to shield body/area from public view).
44. Purification mask (disposable) respirator with filter.
45. Reflective vest.
46. Audio/video recorder.
47. Basic hand tools (bolt cutter, screwdrivers, hammer, shovel, trowel, paintbrushes, etc.).
48. Body bag locks (to secure body inside bag).
49. Personal comfort supplies (insect spray, sun screen, hat, etc.).
50. Presumptive blood test kit.
51. Chalk.
52. Directional marker/compass.
53. Tarps – to protect evidence from weather.
54. Traffic cones.
55. Consent/search forms.
56. Crime scene barricade tape.
57. Flares.
58. Personal protective equipment (PPE).
59. Bindle paper.
60. Biohazard bags.
63. High density lights.
64. Magnifying glass.
65. Permanent markers.
66. Sketch paper.
67. Tool kit.
68. Business cards.
69. Chemical enhancement supplies.
70. Entomology (insect) collection kit.
71. Extension cords.
72. Forensic light source (alternate light source, UV/amp/laser, goggles.)
73. Generator.
74. Gunshot residue kit.
75. Laser trajectory kit.
76. Marking paint/snow wax.
77. Metal detector.
78. Mirror.
79. Phone listings of important numbers.
80. Protrusion rod set.
81. Refrigeration or cooling unit.
82. Roll of string.
83. Rubber bands.
84. Shoe print lifting equipment.
85. Templates (scene and human).
86. Trajectory rods.

Remember, this is a suggested list, not everyone is going to need ever item, ever scene. The new WCSO Crime Scene Search Unit is well stocked and should provide for just about any normal scene needs!
Evidence collection kits recommended for crime scene searches

*Blood Collection*

Evidence identifiers.       Sterile swabs.
Latex gloves.               Test tubes/test tube rack.
Photographic ruler (ABFO scales).
Presumptive chemicals.
Sterile gauze.
Bloodstain Pattern Documentation

ABFO scales.
Calculator.
Laser pointer.
Permanent markers.
Protractor.
String.
Tape.
Excavation

Cones/markers.

Evidence identifiers.

Metal detectors.

Paintbrushes.

Shovels/trowels.

Sifting screens.

String.

Weights.

Wooden/metal stakes.
Trace Evidence Collection

Acetate sheet protectors.

Bindle paper.

Clear tape/adhesive lift.

Flashlight (oblique lighting).

Forceps/tweezers.

Glass vials.

Trace evidence vacuum with disposable collection filters.

Bindle (from German das Bündel = bundle, bale) is a term used to describe the bag, sack, or carrying device used by the (commonly American) sub-culture of hobos.
Fingerprint
Black and white film.
Brushes.
Chemical enhancement supplies.
Cyanoacrylate (super glue) wand / packets.
Flashlight.
Forensic light source.
Lift cards.
Lift tape.
Measurement scales. (RULER)
One-to-one camera.
Powders.
Impression

Bowls/mixing containers.

Boxes.

Evidence identifiers.

Measurement scales.

Permanent markers.

Water.

Plaster of Paris
Pattern Print Lifter
Chemical enhancement supplies.
Electrostatic dust lifter.
Gel lifter.
Wide format lift tape.

Toolmarks
Casting materials.

Trajectory
Calculator.
Canned smoke.
Dummy.
Laser.
Mirror.
Protractor.
String.
Trajectory rods.
Guideline for conducting a crime scene search.

1. Approach scene
   ✓ The direction and location you approach the scene from should cause as little disturbance to the scene as possible.

2. Secure and protect
   ✓ Insure that no unauthorized persons are permitted to enter the scene and insure no evidence is removed prior to being properly documented and collected.

3. Preliminary survey
   ✓ **STOP** and look at the scene, start evaluating what steps you need to take.
Guideline for conducting a crime scene search.

Refer to department policy/protocol for particular order of steps.

If no policy or protocol is in place, use your training and past experience.
Methods of conducting a preliminary investigation.

1. Upon arrival at the scene, determine if a crime has been committed. (The specific crime and elements of the offense.)

2. Cautiously approach and enter the crime scene, perform a “walk through,” remaining observant of any person, vehicles, events, potential evidence, and environmental conditions.

3. Provide first aid to injured persons and request emergency medical attention, if necessary.

4. **Determine if a weapon is involved and secure it.**

5. Locate and interview victims and witnesses. Keep witnesses separated. Be aware of any persons or vehicles attempting to leave the scene.
6. Obtain identification of witnesses’ name, date of birth, address, residential telephone number, place of employment, and work phone number and other important information.

7. Document specific information in “field notes” regarding the crime scene.

8. Identify and arrest the person responsible, if possible. Determine whether a "fresh pursuit" would be of value (if the suspect is still in the vicinity).

9. Conduct a “neighborhood or door-to-door canvass,” if necessary.

10. Remain alert and attentive.

11. Follow department policy.
FIELD NOTES
Obtain and record the following information:

**How:**

- did the suspects get in?
- Was the crime committed?
- Was evidence discovered?
Protection of a crime scene.

Protect the crime scene from destruction, contamination, or removal of evidence and loss of property.

A little much but you get the message, use the tape to control entry to the area.
If necessary, use street barricades, ropes, police line" tape, or additional personnel around the perimeter to keep unauthorized persons out.
Once evidence has been located, remind personnel not to touch, move, or handle the items, in any way, until the evidence has been:

- Photographed
- Sketched
- Documented

Ready to be collected, marked, and preserved.
Establishing a “chain of custody.”

- A record of all individuals who handle the evidence, as well as any details of events.
- Documentation should begin during the preliminary investigation.
- Ensure that evidence tags are created.
- Each time the evidence exchanges possession from one person to another, or moves from one location to another, the investigator must record this transaction.

“chain of custody.”

Always follow department policy and protocol.

- It is critical to record all pertinent information possible and maintain the chain of custody.
Conducting a final survey of the crime scene.

A final “walk through” of the crime scene.

It ensures that evidence has been collected and scene has been processed prior to release.

Ensures that evidence, equipment, or materials are not inadvertently left behind and dangerous materials or conditions have been reported and addressed.
Conducting a final survey of the crime scene:

During the walk through, the following should be ensured:

1. Each area identified as part of the crime scene is visually inspected.

2. All evidence collected at the scene is accounted for.

3. All equipment and materials generated by the investigation are removed.

4. Any dangerous materials or conditions are reported and addressed.

5. Crime scene is released in accordance to department policy.
After the Search is complete, but prior to releasing the scene, it is important to DEBRIEF the search team by the investigator(s) who are in charge of the search:

This enables law enforcement personnel and other responders to share information regarding particular scene findings prior to releasing the scene.

Provides an opportunity for special requests for assistance, and the establishment and verification of post-scene responsibilities (Body identification, notification, press relations, and evidence transportation).

Share investigative data (if collaborating with other law enforcement agencies/jurisdictions).
This collaboration helps in following ways:

1. Determine what evidence was collected

2. Discuss preliminary scene findings with team members.

3. Discuss potential technical forensic testing, crime laboratory, storage facility, and the sequence of tests to be performed.

   Good opportunity for investigators and other responders to ensure that the crime scene search is complete.

Allows law enforcement officials to prepare a press release or public news conference, if necessary.

Allows the investigator(s) in charge to make special requests and to remind all responders of maintaining confidentiality of case.
The importance for maintaining a case file.

The file is a record of all actions taken and evidence collected at the scene. If it is not written down, it did not happen!

This documentation allows for independent review of the work conducted, or if preparing a case for prosecution.
A case file contains the following information:

1. Initial responding deputies documentation. (Offense Report, Property Reports, CCH’s, 27’s…ect…) 
2. Emergency medical personnel documentation. 
3. Entry/exit documentation. 
4. Photographs/videos. 
5. Crime scene sketches/diagrams. 
6. Evidence documentation/copies of tags. 
7. Other responder’s documentation. (Additional Deputies, Fire Departments, JP’s) 
8. Record/copy of consent form or search warrant. 
9. Forensic reports, as they become available.
The importance for conducting a follow-up investigation:

Reasons for conducting a follow-up investigation.

1. To follow-up on leads pertinent to the case once the preliminary investigation has been concluded.

2. Should be based on what is discovered or learned during the preliminary investigation.

3. Consists of double-checking on addresses, possible escape routes, and other leads that may provide important new information.
Tasks performed in a follow-up investigation include the following:

1. Analyzing reports and documents to ensure accuracy.

2. Reviewing official departmental records and files for more evidence.

3. Gathering information on friends and associates of suspect (s).

4. Examining the victim’s background.

5. Checking police intelligence files to develop potential suspect (s).

6. Organizing police actions, such as neighborhood canvassing, raids, and search warrants.
Sketching and Photographing
The use of sketches during crime scene searches.

Definition of a crime scene sketch: a rough drawing, which represents the crime scene and serves to supplement photography by providing accurate information concerning distance between various points in the scene.
The main reasons for using crime scene sketches.

1. To provide a permanent record of conditions otherwise not easily recorded (i.e., distance, photography, and movement of suspect).

2. To reconstruct the crime scene.

3. To record the exact location and spatial relationships between pieces of evidence and the surroundings.

4. To help refresh the investigator’s memory.

5. To help corroborate testimony of witnesses.

6. To eliminate unnecessary and confusing details.

7. Can be enlarged by an artist in order to be as an exhibit during a courtroom testimony.
The crime scene sketch should include the following information:

- Investigator’s complete name and rank.
- Date, time, type of crime, and assigned case number complete name of other officers assisting in the making of the sketch (measuring, etc.).
- Address of the crime scene, its position in a building, landmarks, and so on.
- Scale of the drawing (if no scale, that should be indicated by printing “not to scale.”).
The crime scene sketch should include the following information:

- Primary items of physical evidence and other critical features of the crime scene, located by detailed measurements from at least two fixed points of reference.

- Key or legend identifying the symbols or points of reference using in the sketch.
The types of crime scene sketches.

The rough sketch:

a) A rough sketch is a quick and crude drawing of a crime scene.

b) Usually drawn on 8 ½ by 11-inch note or graph paper, using a clipboard and a pencil. It’s not drawn to scale.

c) It should be as accurate as possible, under the circumstances, without deliberate distortion, and it should contain all measurements necessary to make a scale drawing.

d) The rough sketch must be done entirely at the scene. Additional "remembered" details should never be placed on a rough sketch after you have left the scene.
The finished sketch.

a) A finished sketch is usually drawn on 8 ½ by 11-inch graph or plain paper, using permanent ink. This sketch is a supplemental page to your investigative report.

b) It is drawn at the station, using a ruler or a particular drafting tool.

c) Like the rough sketch, the typical finished sketch is not drawn to scale (this fact should be clearly indicated on the sketch), but it should contain all the necessary information for producing a scale drawing of the crime scene.

Even if you do not do a scale drawing at this time, you should be able to come back 10 years from then and do a perfect scale drawing.
The scale drawing:

A) The scale drawing is a **blueprint** of the crime scene, drawn in ink on a large display board (Ex: 30 inches by 36 inches); and to be used for court presentations. All details in the drawing should be large enough to be seen at least 15 feet away by jury members.

B) The drawing should be drawn to exact scale, with the scale reduction (Ex: \( \frac{1}{2} \) inch equals 1 foot), indicated clearly on drawing.

C) Since the drawing is to scale, distance arrows and measurements indicating the exact location of the evidence should not be included.
D) If requested, dimensions and descriptions can be placed on the scale drawing in the courtroom by using your rough or finished sketch for reference.

The perspective sketch:

A) Objects are drawn as they appear to the eye with reference to relative distance or depth.

B) Useful when no camera is available or the condition of the scene is such that a photograph would not be illustrative. (Ex: 3-D Cube)
The projection sketch:

A) Most frequently used.

B) All places and objects are drawn in one plane, as seen from above.

C) Cross projection drawing is where walls and ceiling of a room are seen as folded out into the same plane on the floor.

D) This type of drawing is used to illustrate interrelationships between objects in different planes, such as bullet holes and blood stains.
A CROSS-PROJECTION SKETCH

LEGEND
A = Crowbar

TITLE BLOCK
CASE NUMBER: 1426-82-CID063
SCENE PORTRAYED: Room 7, Bldg 48-3251-8 Troop Billes
LOCATION: Ft McClellan, AL 36205
OFFENSE: Burglary investigation
VICTIM: SP4 Betty M. Holmes
TIME & DATE BEGAN: 1030, 12 Jan 85
SKETCHED BY: Mr. Frank L. Wright
VERIFIED BY: SA David L. Kelly

SCALE: 1/32 inch = 1 Foot
The schematic sketch:

Used to represent an orderly combination of events that has occurred. (Ex: tracing the path of a fired bullet through glass, flesh, or walls; tracing the path of a skidding vehicle.)
The detailed sketch:

1. Used when describing a small area which is not illustrated due to the scale chosen for the rough or finished drawing.

2. Used when small items of evidence must be illustrated prior to their removal from immovable objects. (Ex: bullet holes, tool marks, blood spots or patterns, on the location of a latent fingerprint.)

A drawing within a drawing:
Prevalent sketch:

Sketch of the general locality.

A sketch of the scene of the crime and surrounding environment.

This sketch would, for example, include other buildings, roadways or the presence of miscellaneous material nearby.

An arson scene is an example of one that might require this type of sketch in order to illustrate the proximity of combustible material.
The elements of a crime scene sketch.

**Measurements**

1. A decision must be made on the scope of the sketch.

2. Take measurements with equal accuracy whenever possible. Always indicate the method used to arrive at a given dimension, such as the rule or pace.

3. The sketcher should always have control of taking and observing the measurements.

4. While measurements may be indicated between movable objects to establish a correlation, at least one set of dimensions must reach immovable objects or positions. This should be clearly identified in the notes as reference points. (more on this later)
Compass direction.

A standard arrow of orientation pointing to the north must be present in order to facilitate proper orientation of the sketch.
Scale or Proportion.

1. This will normally be dependent upon the area to be portrayed, the amount of detail to be shown, and the size of the drawing paper. The scale can be determined by dividing the longest measurement of the drawing paper. (Ex: A scene 70' X 100' and drawing paper approximately 8" X 10", would require a scale of 1" = 10 feet.)

   Formula: \( \text{100 feet} = 10 \text{ feet/inch} \) or \( \text{1 inch} = 10 \text{ feet} \).
Suitable scales for use in police work are as follows:

Areas may not be in proper proportion in the sketch but this will be corrected when proper measurements are reproduced to the scale.

1 in. = 1 ft. (for small rooms)

½ in. = 1 ft. (for small rooms)

¼ in. = 1 ft. (for large rooms)

1/8 in. = 1 ft. (for large areas w/several buildings)

½ in. = 10 ft. (for large buildings)

½ in. = 10 ft. (for buildings w/surrounding gardens)

1/8 in. = 10 ft. (for large areas w/several buildings)

1/8 in. = 100 ft. (for areas with lengths at least 1 mile each way)
Legends or Key

a. An explanation of symbols used to identify objects in the sketch.
b. Excessive lettering should be avoided, so objects are given numerical or letter designations.
c. When the scene consists of large outdoor sites, conventional signs used on maps can be used advantageously.
d. When possible, the legend must be unmistakably related to the sketch so the sketch will have meaning.
The title should contain data necessary to authenticate it.

The following information should be included:

(1) Offense Number
(2) Date and hour of case or incident (when sketch is prepared)
(3) Scene portrayed
(4) Location sketched
(5) Person who sketched the scene
(6) Scale
(7) Legend or Key
Types of methods for developing a sketch

Triangulation

Measurements are made by triangulation from two fixed permanent objects within the area of the crime scene to the point you desire to plot and illustrate in the sketch. (Ex: fixed starting points may be the corners of a room. From these fixed points, measurements are made to the various objects within the scene.)

NOTE: By calculating the reduced distances on a scale drawing and scribing arcs from the fixed points indicated, the point at which the arcs intersect is the exact location of the object.
Rectangular Coordinates

Objects are located in this method by their distance from two mutually perpendicular lines.

Make sure that the straight-line measurements taken from a given base line are taken with the rule at right angles with the given base line. Only then will the finished scale drawing be an accurate representation of the scene.
The student will be able to summarize the use of photographs during crime scene searchers.
Reasons for taking Crime Scene Photographs

Photographs set forth a visual record of the crime scene and all of its pertinent factors.
Photographs present a logical "story" told by the scene in visual form.

Crime scene photography is one of the major integral facets of the entire investigative process.
Photographs should be taken prior to disturbing the scene if at all possible. The photographs need to depict the scene as it was discovered.

The more pictures you take the better.

YOU CANNOT TAKE TOO MANY!
Once the scene has been photographed overall, detail photos should be taken to include measurement devices.

If an ABFO scale is not available, any thing that can be measured later will do.

**Odontology** is the scientific study of the **teeth**.

American Board of Forensic Odontology
Photographic Log

1. It is a complete record of photographic operations at a crime scene.

2. Used to record the chronology of pictures taken.

See handout of photo log
A. A sequence of photographs showing all pertinent locations in an organized manner must be compiled to adequately exhibit a crime scene.

B. Subject matter found in a crime scene should be represented by a progression of "general to specific."

C. To achieve a progression, the crime scene should be covered by photographs from three major vantage points:

1. Long-range photographs.
   a. These are usually an overview of the scene.
   b. Examples: an aerial view of an apartment complex; a few down a long hallway looking into a bedroom.
Mid-range photographs.

a. Usually taken in a manner which portrays the scene from approximately ten to twenty feet of distance from the subject.

b. In order for the viewer to associate the general crime scene with separate areas photographed, sufficient detail should be contained in each photograph to allow this association.

Close-up photography.

a. Normally taken five feet or less from the subject matter.

b. Detailed photographs of items that could not be effectively seen and studied in long-range or mid-range photographs.
The different categories of "range" photographs.

1. Focusing on the location of the crime.
   a. These photographs depict various places that are part of the crime scene area. Example: aerial photographs (exterior and interior).

2. Concentrating on the nature of the crime.
   a. The nature of the crime should try to be depicted which will assist the investigator in determining the type of crime committed.
3. **Centering on the results of the crime.**

   a. Example: a homicide may have begun with a house break-in through a kitchen window, continued with vandalism and culminated with homicide when the victim confronted the intruder.

   b. The results of each portion of a crime are depicted in sequence to reproduce events.

4. **Featuring the physical evidence existing at the scene.**

   a. These are of great relevance to the investigation.

   b. Pictures of all evidence as it relates to a crime scene will ultimately enable the connection of the evidence to be made with the crime scene and the defendant in court.

   c. This type of photograph will be a major component in establishing the chain of custody of items introduced in the courtroom.
5. Focusing on follow-up activity not directly occurring at the scene.

   a. Example: autopsy photographs; photographs of live victims or suspects to show bruises or other wounds.

   Now lets take a look at some photographs and see how they measure up.
General standards used to review the credibility of crime scene photographs.

No matter how extensive the photographic efforts are at a crime scene, they must withstand the test of legal admissibility.
General standards used to review the credibility of crime scene photographs:

1. Accurate representations

2. Free of distortion.

3. Material and relevant.

4. Unbiased.
The relationship between crime scene sketches and crime scene photographs.

1. Sketches supplement photographs.
2. Sketches combine features of both notes and pictures.
3. Photographs portray greater detail.
4. Sketches eliminate unnecessary detail.
5. Photographs provide permanent record of items that may be overlooked or forgotten.
6. Photography, being a two-dimensional representation of the scene of a crime, does not provide accurate information concerning the distance between various points in the scene.

7. A sketch provides true distance relationships which will complement and supplement photographic representations of the crime scene.

8. In a photograph, objects in the foreground are often distorted as compared with those in the background.

9. Frequently only part of a scene can be shown in a photograph.

10. Sketches are not a substitute for notes or photographs. They are merely a supplement to photographs.

11. Sketches, photographs, and notes should be utilized together at the crime scene to provide the most accurate account of what happened.
Drawing Practice

see handout
10 feet from base point 1 to base point 2.

<table>
<thead>
<tr>
<th>1</th>
<th>10 feet</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>5’</td>
<td></td>
</tr>
<tr>
<td>2A</td>
<td>6’</td>
<td></td>
</tr>
<tr>
<td>1B</td>
<td>7’</td>
<td></td>
</tr>
<tr>
<td>2B</td>
<td>4.5’</td>
<td></td>
</tr>
<tr>
<td>1C</td>
<td>7’</td>
<td></td>
</tr>
<tr>
<td>2C</td>
<td>8.5’</td>
<td></td>
</tr>
<tr>
<td>1D</td>
<td>8.5’</td>
<td></td>
</tr>
<tr>
<td>2D</td>
<td>7.5’</td>
<td></td>
</tr>
<tr>
<td>1E</td>
<td>9’</td>
<td></td>
</tr>
<tr>
<td>2E</td>
<td>4.5’</td>
<td></td>
</tr>
</tbody>
</table>

R = 1.5’
The process of producing fingerprint evidence during a crime scene search.
Fingerprints as physical evidence.

Relate directly to the ultimate objective of every criminal investigation, the positive identification of the offender.

Prove person's presence at crime scene.

Frequently present at a crime scene.
The methods of classifying fingerprints.

A fingerprint classification is a formula given to all ten fingers on a fingerprint card based on a pattern type, ridge count, or ridge tracing. Anything less cannot be classified and searched.
The fingerprint classification could be referred to as the alphabet by which fingerprint cards are filed.
The only patterns usually used to define pattern areas for classification purposes are loops and whorls. The pattern area consists of the part of a loop or whorl in which appear the cores, deltas, and ridges with which is the focus when classifying.
Despite such factors as aging and a variety of environmental influences, a person's fingerprints have never been known to change. The unchanging pattern thus provides a permanent record of the individual throughout life.

No change in prints during life time!
Methods for identifying FINGERPRINTS

Scientific basis of fingerprint identification

• Based on distinctive ridge outlines that appear on the bulks on the inside of the end joints of the fingers and thumbs.

• The ridge outlines have definite contours and appear in several general pattern types. Each type has general and specific variations of the pattern, depending on the shape and relationship of the ridges.

• The ridge arrangement on every finger of every person is different.
• The ridge arrangement is permanent throughout the person's life; that is, the ridge arrangement never changes from birth to death.

• These statements are true also of the ridges on the palms of the hands and the soles of the feet. Identifications in those areas have the same technical and legal validity as fingerprints.

   An identification is made by comparing the ridge details in two prints to determine whether or not they match.
Types of Patterns

Fingerprints may be resolved into three large general groups of patterns:

- Loop
- Arch
- Whorl
Patterns can be further subdivided by means of the smaller differences existing between patterns in the same general group as follows.

a. Arch loop
b. Whorl
c. Plain radial
d. Plain tented
e. Ulnar
f. Accidental double
g. Central pocket
Identification points

1. Bifurcation - ridge forks and becomes two or more ridges.

2. Ending ridge - ridge makes a sudden stop.

3. Ridge island – ridge bifurcates and then forks into a ridge.


5. Short ridge – no longer than the width of the corresponding ridges.

6. Divergence - spreading apart of two ridges that have been running parallel or nearly parallel.

There is no specific number of comparison points required for a positive ID.

Only enough points are necessary to form an opinion in the mind of the expert who is making the comparison.
Visible impressions.

1. Print that has been defected with foreign matter.

2. If a finger is placed in a thin layer of dust, the dust may cover the friction ridges. If the finger subsequently touches a clean surface, a visible fingerprint may result.

3. A visible fingerprint may also develop as a result of touching other substances such as blood, wood, flour, ink or oil.

4. Impressions are usually distinct and visible without the use of additional light.

5. Should be a caution sign to an officer that there are probably some good prints available.

Plastic Impressions

1. The result of the fingers being pressed into a soft substance, such as putty, wet paint, soap, grease, tar or wax, and are visually distinct.

2. They are also found on recently painted surfaces, in the gum on stamps or envelopes, and on adhesive tapes.
Latent Impressions (patent fingerprint).

1. Occurs when the entire pattern of whorls on the finger, which contain small amounts of grease, oil, perspiration, or dirt, is transferred to an object when it is touched.

2. The grease and oil are usually neutral and are transferred to the finger when the person touches other areas of his or her body containing various bodily excretions.

3. Latent prints are usually not visible (“hidden”) to the naked eye and require the use of special techniques and equipment in order to examine properly.

4. Is a reproduction of the ridges of fingers, palms, toes, or soles of the feet on any surface touched.
The process of producing latent impressions

As we all know, just looking for a fingerprint with the naked eye does not reveal all of the prints on an object. We have to use other means to locate the prints.

★ Techniques for locating latent impressions ★

☞ Examination of a surface from different angles

& The beam from a flashlight held at an acute angle with a surface may reveal impressions that are not otherwise visible.

& Breathing on a surface may cause fingerprints to be visible on certain types of materials.
The quality of latent impressions can be affected by conditions such as:

The manner in which the impression was transferred.

The nature and quantity of the substance (perspiration, oils, blood, and other), which cover the ridge surfaces.

Weather conditions
- Rain
- Humidity

Any physical or occupational defects of the person transferring the print.
Occasionally, wet items, such as beer cans or glasses that have condensation on the outside of them, or automobiles which have been covered with dew, must be processed for prints.

(1) These items should first be allowed to dry under natural conditions in a sheltered area.

(2) Under no circumstances should heat lamps or artificial heat of any kind be used to dry an object.
Protect all areas, as best you can, where you think the criminal has had his hands and feet.

Any surface, that has been touched, is a potential place to lift latent impressions.

Decide whether or not there are latent prints on the objects touched.

Points of entry and exit should be carefully examined.

Remember !!!

The use of powders and chemicals may interfere with physical and chemical analysis, particularly in the case of blood, fabrics, and documents.
In cases involving items with material adhering to their surfaces and/or will require further laboratory examinations, fingerprint processing **should not** be performed at the crime scene.

These items should be carefully collected in a manner not likely to disturb the fingerprint evidence and submitted so the prints can be lifted in a controlled environment.
Dusting for Latent Impressions

For hard, dry, smooth surfaces it is best to use printing powder.

Dusting the fingerprint with powder makes it visible to the naked eye and prepares the print to be lifted for safekeeping as evidence.

**WARNING!**

No attempt should be made to brush or apply powder to prints in dust, obviously greasy prints or bloody prints, as this will usually destroy them.
Before developing the print, the fingerprint brush should be cleaned and the bristles separated by rolling the handle rapidly between the palms of the hands and letting the bristles spread out naturally.

Black powder should be applied to white or light colored surfaces.

Gray powder should be used on dark-colored surfaces, mirrors, and polished metal surfaces.

Black or gray powder can be used on clear transparent glass.

Other colors of powder used, but black or gray are the most common.
Powder should be used sparingly.

Distribute the powder lightly across the fingerprint until the characteristic outlines of the ridge become visible.

Any excess powder may destroy the clarity of the ridge detail and render it useless for identification purposes.
Prints should be photographed before they are lifted

A small tab of paper on which is inscribed appropriate identifying data, should be placed in the field of view in a manner that will insure its inclusion in the photograph.
Use lifting tape large enough to cover the entire latent impressions.

Press the sticky side of the plate against the powdered impression(s), do your best to avoid air bubbles and wrinkles in the tape.

Rub the entire surface starting in the center and working toward the edges.

Place on a 3 x 5 card.

Identifying data can be written on the 3 x 5 card to indicate the location, date, case number, examiner's name, or any other pertinent information.
<Fingerprint Lifting Practice>
Methods used to develop latent finger impressions on paper, cardboard, unpainted wood, or other absorbent surfaces.

**IMPORTANT**

Iodine prints begin to fade once the fuming is stopped.

The prints must be photographed immediately.
Ninhydrin.

This chemical acts as a dye on amino acids that are present in perspiration. The amino acids turn light purple.

Prints will eventually lose contrast, so they should be photographed with a green filter after they are developed.
Silver nitrate crystals are mixed with either distilled water or alcohol to form a solution.
This solution reacts with sodium chloride (salt) present in the perspiration (which forms the ridges in most latent impressions) to form silver chloride.

Items may be immersed in the solution, taken out, blotted, and dried. Items too large to be dipped may be treated by brushing the solution onto the time. Items too large to be dipped may be treated by brushing the solution onto the time. In treating extremely thin types of paper, the solution is best applied with a cotton swab.

Fingerprints developed with the silver nitrate solution appear reddish-brown.
Immersion in silver nitrate solution washes away any traces of fat, oil, and amino acids, so the iodine fuming and the ninhydrin process must take place prior to silver nitrate treatment.
Print development by this method depends on the exposure to light. Sunlight works well. As soon as the ridge detail of the prints is clearly visible, the paper should be removed from the light. Continued exposure will darken the paper; the contrast will be lost.

Photographs should be taken right after development. Store specimens in absolute darkness.
Super-glue fuming

(cyanoacrylate resin)

Used to develop latent impressions on plastic, glass, glossy or waxed paper, metal, leather, lacquered wood, and almost all hard surfaces.
In order to speed up the development process, add $\frac{1}{2}$ a drop of normal sodium hydroxide to the glue.

Development occurs when fumes from drying glue adhere to a latent impression through the friction ridges, then harden as ridge detail is built up on the print.
Lasers.

a. Technique used to develop prints that could not have been developed through the use of powder, iodine, ninhydrin solution, silver nitrate, or super glue fuming.

b. The laser procedure is a clean, relatively easy method to develop prints, and pretreatment of the specimen is not required.

c. Unlike with the ninhydrin method, the age of the print is not important.

d. It is generally used before other methods are employed because no alteration of the evidence is required.

e. In this process, an expanded laser beam, which is used to luminesce certain properties of perspiration, body oils, or other foreign substances found on a latent print.

f. These types of lasers are currently used: argon ion laser, copper vapor laser, and neo dynium. (Yag lasex).

g. Special eye protection must be worn, due to the intensity of the laser light.
THE AFIS SYSTEM

AFIS technology uses a computer to scan and digitize fingerprints, translating the unique ridge patterns of the prints into a binary code for the computer’s searching algorithm.

In a short time, an AFIS computer can compare a new fingerprint with vast files of prints and make identifications that previously were possible only through a time-consuming and error-prone process of manual comparison.

The search time for a search of about 500,000 prints ranges from a half-hour to a matter of minutes.
Rolling Fingerprints
Rolling a full set of legible fingerprints on a standard DPS/FBI fingerprint card.
First things first, make sure the person’s hands are clean and free of foreign matter.

Visually examine the person's hands and fingers.

Temporary disabilities affecting an individual's hand, which are sometimes beyond the control of the identification officer. Example: fresh cuts or wounds, bandaged fingers, occupation (carpenter, bricklayer, and other), blisters, excessive perspiration, or any other disability.

These issues should be noted on the fingerprint card.
Fingerprint cards bearing these notations cannot be properly classified and filed.

If at all possible, injuries or temporary conditions should be allowed to heal prior to taking fingerprints for submission to AFIS or prior to any attempt to classify them.

Prior to taking fingerprints Have the person clean their hands and fingers with soap and water or a good waterless hand cleaner. This will remove any excess perspiration or other foreign material on the finger which could distort the fingerprint.
Recommended equipment:

- Inking plate
- Cardholder
- Roller
- Printer's ink (paste type)
Obtaining Clear and Distinct Fingerprints

The inked surface should be at a height where the person's forearm can assume a horizontal position when the fingers are being inked.

Use a thin coating of ink.

Person should stand in front of and at forearm's length from the inking plate.

It is important that the subject be cautioned to relax and refrain from trying to help by exerting pressure.
In taking rolled impressions, the side of the bulb of the finger is placed upon the inking plate, and the finger is rolled to the other side until it faces the opposite direction (i.e., fingernail to fingernail).

Note:
Stamp pad ink, printing ink, ordinary writing ink, or other colored inks do not produce a suitable fingerprint, are too light, too thin, and do not dry quickly.
Identification, Collection, and Preservation of Evidence

The process of identifying, collecting, and preserving crime scene evidence for examination/analysis.

Prior to gathering physical evidence, the crime scene should be photographed and sketched, a search conducted for latent impressions and casts made of tracks, footprints, and tool impressions, if found.

When collecting, marking, and packaging physical evidence, anticipate the needs of the following:

Who will examine the evidence

Judge

Jury Members
Defense Attorneys
Closely observe the crime scene. It may disclose obvious items such as the weapon used, broken articles, blood, scuff marks, overturned furniture, trampled ground, or smaller physical evidence in the nature of buttons, pieces of torn fabric, as well as trace evidence, such as hair, fibers, or any other particles, which indicate where the victim fought with the assailant.
Marking the Evidence
What to put on the evidence container?

- Case number.
- Exhibit number (when numerous items are seized).
- Date and time of seizure.
- Name and DETAILED description of articles.
- Location at time of discovery.
- Signature or initials of officer making the discovery.
Be sure that you’ll be able to answer “yes” to the following question:

"If I never see this item again until I am seated on the witness stand, will I be able to state that this is the item I collected at a particular location in connection with this particular case, to the exclusion of all other evidence I have ever handled in this or any other investigation?"
“Chain of Custody”
Definition:
A list of persons handling evidence from the time it is collected until the time a court order releases it or orders it destroyed.

If the evidence leaves one person's possession, he or she should record on the bag, to whom the evidence was given, the date and time. Then in a supplement to the report, record the reason it was turned over.
Marking Evidence

Anyone who handles evidence should affix his or her name and badge number to the package containing evidence.

When a piece of evidence is turned in, the investigator should check his or her identification mark on it to ensure that it is the same item.

After an item is returned to the investigator, he or she should determine if the item is in the same condition as when it was discovered. Any change in the physical appearance of the evidence should be called to the attention of the court.
Evidence Packaging
After you have decided what is the best container for the evidence, you will want to properly package it to prevent:

- Spoilage
- Breakage
- Contamination
- Loss.
Each different item should be packaged separately.

Any time you have a package containing a suspected drug that is to be used as evidence, it must be sent to the DPS Lab for testing. Package these items separately from any of the paraphernalia which might be with it.
Different classes of evidence:

Infectious:
The rising specter of AIDS and other dangerous diseases creates a major health concern for criminal investigators charged with collecting and preserving crime scene evidence.

Weapons

Drug Paraphernalia.

Razor blades.

Hypodermic needles.
An unfortunate side affect of these infectious diseases is that it is likely that officers who either lack adequate protective equipment and training, or who are uneasy about the prospect of contracting certain diseases, intentionally or inadvertently limit their searches, thus jeopardizing the development of the case.

And, Don’t be afraid to conduct a complete and thorough search
Soil
(dirt, mud, sand, etc.)

The exact locations from which exemplars are collected should be noted in a sketch.

I got it here
Liquids

Most often encountered in arson, alcohol or drug related cases

If absorbed into another material, the material should be placed into an airtight container (ex: clean, unused paint can with lid)
Beware of acids and caustics that are explosive, corrosive, and/or dangerous.

Vapors can cause the container to expand and fail, resulting in injury or death to anyone nearby.
Flammable liquids and accelerants evaporate easily. Liquid evidence should be weighed for content in metric units.
Firearms
The firearm should be handled carefully by the grip or the sides of the trigger guard.
Never stick anything, such as a pencil, into the barrel of a firearm; this could destroy valuable trace evidence.

There should be no attempt to fire the gun, dismantle it, or to interfere with the mechanism in any way.
Note the following conditions:

Physical appearance of a weapon before it is moved

The position of slide, bolt or cylinder

The position of exposed hammer, firing pin, and safety

Photographs should be taken before the firearm is touched or moved.
Weapon may now be processed for latent impressions.

Avoid areas that appear to be blood stained.

Blood on articles of evidence to be processed for latent impressions should necessitate the article being submitted to the lab before any powder or chemical, is applied, as it will contaminate the blood sample.
Avoid the front of revolver cylinders (smoke halos may be present.)

What does this tell us?

These can often indicate the sequence of firing
Never retain a loaded weapon, unload it.
Marking firearms.

a. Don't deface a firearm with identifying data.
b. Never put marks on an easily removed part.
c. Be consistent with markings.

General notes on firearms.

a. Do not clean or fire the weapon.
b. Do not work mechanism except to unload the round in chamber.
c. Never take the weapon apart.
d. Never place an object inside the barrel.
Loaded firearms.

Rolvlers.

(1) Mark empty cases or live cartridges and the rear edge of the cylinder with a code to show the chambers in which each empty case or live cartridge rested at the time of its removal.

(2) If cocked, carefully release the trigger.

(3) Carefully remove the bullets from their point of impact, and the location where they were found must be recorded accurately.

(4) Handle them as little as possible and package individually in a marked container.
When cylinders must be unloaded

(1) Prepare a drawing and make notes about the position of every fired and unfired cartridge in relation to the 12-o'clock position. (Be careful they do not accidentally spill out of the chambers.)

(2) Place unloaded ammunition in individual containers, which are numbered to correspond to the respective chambers from which each was removed.

(3) Unloaded ammunition may have to be processed for trace evidence and fingerprints.

(4) Place identification data on containers.
Semi-automatic handguns

(1) Usually found cocked with an intact cartridge in the chamber.
(2) Place the safety switch in the "safe" position.
(3) Remove the ammunition magazine.
(4) Preserve the clip or magazine for latent impressions. Do not remove ammunition from clip or magazine. Never work ammunition from the clip or magazine through mechanical action of firearm.
(5) Release the safety (place in fire position).
(6) Place the slide back in order to eject the cartridge.
(7) If a round is jammed in slide-action, do not operate the slide in anyway.
Projectile evidence (expended bullets)

1. Record the position through photography and sketches.
2. Carefully remove the bullets from their point of impact.
   a. Example: If embedded in wood or plaster, cut around bullet site until it falls free.
   b. Retain surface material around entry site for comparison with debris on the bullet.
   c. Collect a sample of any surface material you suspect as having been contracted by a bullet.
   d. Label the control sample clearly.
3. Accurately record the location where they were found.
4. Handle bullets carefully and as little as possible.
5. Place identification marks on the base of the bullets, only if necessary.

Many types of trace evidence (paints, fibers, blood, and wood) may be adhering and may be of great value in reconstructing sequences of events.

6. It is recommended that rather than attempting to mark a bullet directly, it should be packaged individually and the container marked appropriately.
Glass evidence

1. Glass fragments can result from many circumstances. Example: a bullet can shatter glass by passing through it, or glass purposely broken will leave behind fragments in the crime scene and on the perpetrator. When collected, glass could be used to:

a. Show the direction of travel of a projectile.

b. Show the sequence of impact of a projectile.

c. Match other broken glass.
Collection and preservation of glass evidence

a. Carefully collect and package all glass.

b. If glass remains in the window frame, mark the glass with the words, "outside" or "inside," before removing. The purpose of doing this is so that the fracture pattern may be utilized to determine the direction from which the breaking force was applied.

c. Latent impressions lifted from the window glass should have a notation as to which side the latent was found.

d. Exemplar glass should be properly marked and photographed before it is removed. Samples of glass should be taken preferably from all four corners in the window frame rather than possibly contaminated glass on the ground. The purpose for this is to discern if the physical properties of the questioned glass are within the range of the physical properties of the exemplar.
e. Glass on the ground should be carefully examined for latent and shoe prints.

f. The clothing of a suspect should be carefully handled to prevent the loss of evidence. Dry clothing if wet. Clothing is best wrapped in paper to avoid the loss of trace evidence and then packaged in new paper bags.

g. The clothing of suspects should never be included in the same container with exemplar glass, suspected tools, or other trace evidence.

h. Large pieces of glass should be packaged carefully to avoid breakage, shifting and chipping. Properly mark containers in order to prevent them from being cut.
Paint evidence.

   a. If paint cannot be removed without alteration, and if practical, submit the item bearing the questioned paint.
   b. Collect samples with a clean-bladed instrument and include all paint layers. (Afterwards, throw blade away or retain as evidence.)
   c. Exemplar paint should be collected from areas attacked.
   d. Obtain paint samples from all damaged areas on a vehicle because of composition, thickness and/or order of layers frequently vary at different locations. The sequence of paint layers indicates the make of the vehicle. (Refer to the metal when getting samples.)
Paint evidence

e. Smeared paint, particularly metallic automotive paints, may appear quite different from original paint.

f. Sketch the location where an individual paint sample was removed.

g. Paint fragments may be mixed with other debris. This debris may be collected by sweeping or vacuuming into a container that will not permit any loss.

h. Do not use plastic bags when packaging paint evidence. Static electricity strongly holds the chips, making their removal intact very difficult.

i. Do not use letter envelopes, chips can escape through the corners.

j. When packaging, use a tight-fitting cardboard container.
Suspects clothing

1. A suspect’s clothing should be collected in the following manner:

a. Have suspect stand on a large sheet of white paper while removing clothing.

b. Allow clothing to dry, if wet.

c. Do not attempt to remove evidence from the clothing. The location of the evidence on the clothing may be important.

d. Package clothing items in separate paper bags.

e. Collect remaining debris from the large sheet of paper after suspect has finished undressing. This evidence can be carefully folded in a smaller piece of paper and placed in an envelope.
Controlled substances.

1. Keep drugs from different sources (i.e., persons, places) separate in order to:

   a. Preserve such substances for court,

   b. Transport the substances, and

   c. To protect all persons, including the officer, from experiencing harmful effects of certain drugs.
Most illicit drugs come in one of several forms:

a. Plant materials – place in a porous container such as a paper bag to best preserve. For large amounts, such as marijuana growing sites, samples of the material should be collected and the remainder destroyed after weighing in metric units. However, this is done only after the prosecuting attorney has given his or her authorization.

b. Powdered materials – heroin, cocaine, and methamphetamine can be packaged in plastic envelopes that are sealed to prevent loss of powder. The net weight of the powder seized should be computed. The actual weight of the container should then be determined and subtracted from the weight of the exhibit.

c. Liquid material – liquid PCP, liquid LSD, and marijuana may be stored successfully in a glass bottle. Be cautious of liquids composed of explosive, corrosive, or dangerous materials. Weigh liquid evidence for content in metric units.
d. Tablets or capsules – package in a clear plastic envelope that has been sealed and properly marked. Weigh the evidence and count the dosage unit; the result should be recorded as “approximate” weight.

Avoid the use of slang expressions when marking drug evidence.

Do not use plastic bags because static electricity causes the substance to cling to the bag.
a. Blood is the stain found most commonly.
b. Blood can provide an investigator with much valuable evidence.
c. Investigators should remember that not all bloodstains found at a crime scene belong to the victim.
d. Indeed, a bloodstain may belong to the perpetrator, who might have been injured while committing the crime.
e. In any case, it is usually a good idea to adhere to the following guidelines when considering the collection of blood:

(1) Good photos and videos should be taken of bloodstains.
(2) Samples should be taken from all locations where blood is found.
(3) Blood samples may easily rot, so they should be swabbed and air-dried prior to storage.
Prints and Impressions.

1. Print and impression evidence should be regarded as valuable and must be protected.

2. Examples of impression evidence include:
   a. Tool marks (usually found on metal doors or window frames and on locked metal desks, cabinets, and safes).
   b. Tire impressions.
   c. Foot impressions.
   d. Teeth impressions (can be located on partly eaten food at crime scenes).
3. Prints, such as latent prints and shoe prints, should be protected against smearing, weathering, and all types of mechanical damage.

4. Heat may destroy some prints.

5. Impressions such as from a finger, tool, tire, and shoe may be readily destroyed if another surface comes into contact with them.

6. For this reason, access to the scene should be limited to a few persons who are directly involved with the collection of evidence.
Hair and Fibers

It may be necessary to close all doors/windows to keep things from being blown away. (Make note of all open doors and/or windows.)

May be carried away by other objects or persons that come into contact with them.

The best way to avoid any of these occurrences is to restrict access to the scene until the investigation of the scene complete.
Precautions that should be taken to avoid contracting Acquired Immune Deficiency Syndrome (AIDS) or other infectious diseases during a search.
A. AIDS is caused by a virus, which can be transmitted by intimate sexual contact, illicit use of intravenous drugs and blood and blood product transmission to newborns by infected mothers.

B. AIDS is not an airborne disease. It cannot be transmitted through toilets, showers, and/or saliva.

C. Even though low concentrations of the AIDS virus have been isolated in saliva, tears, and urine. However, there is no evidence that the disease can be transmitted from these bodily fluids.
There are certain precautions, which should be taken to avoid contracting AIDS or other infectious diseases at a crime scene.

1. All blood and body fluids should be treated as potentially infectious.

2. Disposable latex gloves should be worn when there is potential for Intermediate contact with blood or body fluids.

A) Research has indicated that the AIDS virus can survive from 4 to 7 days in dried blood; up to 15 days in liquid blood at room temperature.

B) It has not been determined how long the AIDS virus can survive in other bodily fluids.
After finishing with a crime scene, remove gloves and wash hands thoroughly with a special anti-bacterial soap and water.

Hands or other exposed skin surfaces should be washed thoroughly and immediately after accidental contamination with blood or body fluids.
In the case of an accidental wound, immediately clean wound with isopropyl (rubbing) alcohol and seek medical attention.

Avoid being punctured by soiled needles, knives, razors, or other sharp instruments.

a. Do not attempt to re-sheath needles.
b. Use caution when thrusting a hand into clothing during searches.
c. Place sharp objects in puncture proof containers.
Spills of blood or other potentially contaminated body fluids should be flooded with liquid germicide before cleaning and then decontaminated with a fresh germicidal chemical, such as any of the following:

a. Diluted household bleach - 1:10.
b. Isopropyl (rubbing alcohol - 35% solution.
c. Lysol.

Saliva has not been implicated as a transmitter of AIDS. However, if cardiopulmonary resuscitation (CPR) is necessary, mouthpieces/shields and ventilation devices should be worn. This will help protect the officer from any potentially infectious diseases.
Evidence stained with blood or body fluids should be handled with disposable latex gloves, placed in plastic bags, and clearly labeled.

a. The storage of liquid blood or other damp evidence in plastic bags for an extended period of time can destroy its evidentiary value.

b. It is necessary to immediately transport evidence to the laboratory, or to a controlled drying compartment area to dry the evidence.
When a dried bloodstain is scraped, particles of dried blood fly in every direction. Therefore, surgical masks and protective eyewear should be considered when the possibility exists that dried blood particles may strike the face or eyes.
Even after evidence has been properly dried and packaged, it is still potentially infectious. Therefore, appropriate warnings should be placed on all items.
When a dead body is discovered and is known or suspected of having AIDS, it should be clearly marked as such with a distinctive toe tag or label; and then transported in a plastic body bag.
Safety precautions, safe work practices, and personal protective equipment (PPE) recommended for personnel processing crime scenes in hazardous environments.

Routes of exposure:

1. Inhalation.
2. Skin contact.
3. Ingestion.
4. Injection.

Safety

1. Bloodborne pathogen safety.
2. Chemical safety.
3. Confined space safety.
Personal Protective Equipment

1. Hand protection.
2. Eye protection.
3. Foot protection.
4. Respiratory protection.
5. Head protection.
Hazardous materials transportation.
1. Title 49 (Code of Federal Regulations)
Special Storage Needs for Certain Types of Evidence

Blood

Liquid blood must be refrigerated

In order to prevent coagulation, a preservative such as EDTA (ethylenediaminetetracetic acid) must be added and stored in vials that can be capped.

Dried blood must be stored in paper, not plastic, and away from moisture.
Explosives

When in doubt, seek expert advice
Tools

Protect the working surfaces from:

- Mechanical damage
- Rust and corrosion
Preserving evidence during foul weather

Work fast to collect as much evidence as possible

First collect the evidence that will suffer the most loss

Try to protect shoe and tire impressions from rain, dew, snow, and hail by covering with boxes or plastic.
DNA Evidence

Homozygous

Heterozygous

Heterozygous
DNA (deoxyribonucleic acid)

- the molecule that encodes genetic information

DNA is a chemical substance contained in cells, which determines each person’s individual characteristics

An individual's DNA is unique except in cases of identical twins.

Biological fluids - fluids that have human or animal origin; are most commonly encountered in crime scenes containing blood, mucous, perspiration, saliva, semen, vaginal fluid, and urine
Two methods of DNA evaluation

DNA analysis/examination –

process of testing to identify DNA patterns or types. In the forensic setting, this testing is used to exclude or include individuals as possible sources of body fluid stains (blood, saliva, semen) and other biological evidence (bones, teeth, hair). This testing can also be used to indicate parentage.

DNA profiling -

the result of determining the relative positions of DNA sequence at several locations on the molecule.
Important considerations of DNA evaluations

DNA is analyzed (examined) in body fluids, stains, and other biological tissues recovered from evidence.

The results of DNA analysis of questioned biological samples are compared with the results of known samples.

Note: DNA analysis of known samples is an examination that can associate victims(s) and/or suspect(s) with each other or with a crime scene.
Examinations can determine the following:

- Presence or absence of blood in stains
- Whether blood is human or nonhuman
- Animal species
Blood examinations cannot determine the age or the race of a person.

Conventional serological techniques are not adequately informative to positively identify a person as the source of a stain.
Maintaining a “chain of custody” when collecting and preserving potential DNA evidence

The key point is to keep a detailed list of individuals who had control of the evidence at any point, from collection to final disposition.

Always follow department policy, protocol, and current laws.
Methods of collecting known blood samples

A. Only qualified medical personnel should collect ("draw") blood samples from an individual.
B. At least two 5-mL tubes of blood in purple–top tubes with EDTA as an anticoagulant for DNA analysis; and drug or alcohol-testing samples in gray-top tubes with NaF (sodium fluoride) should be collected.
C. Each tube should be identified with the date, time, subject’s name, location, collector’s name, case number, and evidence number.
D. Refrigerate, do not freeze blood samples. Use cold packs, not dry ice during shipping.
E. Pack liquid blood tubes individually in Styrofoam™ or cylindrical tube containers with absorbent material surrounding the tubes.
F. Label the outer container: **KEEP IN A COOL DRY PLACE, REFRIGERATE UPON ARRIVAL**, and **BIOHAZARD**.
G. Submit blood samples to a crime laboratory as soon as possible.
Collecting Blood Samples

Liquid blood on a person

1. Absorb suspected liquid blood onto a clean cotton cloth or swab.
2. Leave a portion of the cloth of swab unstained as a control.
3. Air-dry the cloth or swab and pack in clean paper or an envelope with sealed corners.
4. Do not use plastic containers.
1. Absorb suspected dried blood onto a clean cotton cloth, or swab, moistened with distilled water.
2. Leave a portion of the cloth or swab unstained as a control.
3. Air-dry the cloth or swab and pack in clean paper or an envelope with sealed corners.
4. Do not store in plastic containers.
Blood on surfaces or in snow or water

1. Absorb suspected liquid blood or blood clots into clean cotton cloth or swab.
2. Leave a portion of the cloth of swab unstained as a control.
3. Air-dry the cloth or swab and pack in clean paper or an envelope with sealed corners.
4. Do not store in plastic containers.
5. Collect suspected blood in snow or water immediately to avoid further dilution.
6. Eliminate as much snow as possible.
7. Place in a clean airtight container.
8. Freeze the evidence and submit to the library as soon as possible.
Bloodstains

Air-dry wet bloodstained garments

Wrap dried bloodstained garments in clean paper

*Do not place wet or dried garments in plastic or airtight containers*

Place all debris or residue from the garments in clean paper or an envelope with sealed corners.
Air-dry small suspected wet bloodstained objects

\textbf{Remember:}

Preserve bloodstain patterns

Avoid creating additional stain patterns during drying and packaging

Pack to prevent stain removal by abrasive action or packing materials during shipping

Pack in clean paper

Do not store in plastic containers
When possible, cut a large sample of suspected bloodstains from immovable objects with a clean sharp instrument.

Collect an unstained control sample to prevent stain removal by abrasive action or packaging materials during shipping.

Do not store in plastic containers.
Absorb suspected dried bloodstains on immovable objects onto a clean cotton cloth or swab, moistened with distilled water

Leave a portion of the cloth or swab as a control. Air-dry the cloth or swab and pack in clean paper or an envelope with sealed corners. Do not store in plastic containers.
Blood examination request letter

A blood examination request letter should contain the following:

a. A brief statement of factions relating to the case.
b. Claims made by the suspects(s) regarding the source of the blood.
c. Whether animal blood is present.
d. Whether stains were laundered or diluted with other body fluids.
e. Information regarding the victim(s)’ and suspect(s)’ health, such as AIDS, hepatitis, or tuberculosis

Follow Department policy and that of the receiving lab
Collecting saliva and urine samples

1. Use clean cotton swabs to collect saliva samples.

2. Rub the inside surfaces of the cheeks and gums thoroughly.

3. Air dry the swabs and place in clean paper or an envelope with sealed corners.

4. Do not use plastic containers.

5. Identify each sample with the date, time, subject’s name, location, collector’s name, case number, and evidence number.

6. Samples do not need to be refrigerated.
Saliva on cigarette butts

1. Pick up cigarette butts with gloved hands or clean forceps. Do not submit ashes.
2. Air dry and place the cigarette butts from the same location (ashtray) in clean paper or an envelope with sealed corners.
3. Do not submit the ashtray unless latent print examination is requested.
4. Package the ashtray separately.
5. Do not use plastic containers.
Saliva on chewing gum

1. Pick up chewing gum with gloved hands or clean forceps.

2. Air dry and place in clean paper or an envelope with sealed corners.

3. Do not use plastic containers.
Saliva on envelopes and stamps

1. Pick up envelopes and stamps with gloved hands or clean forceps and place in a clean envelope.

2. Do not use plastic containers.

3. Submit to a crime laboratory as soon as possible.
a. Absorb suspected liquid saliva or urine onto clean cotton cloth or swab.

b. Leave a portion of the cloth unstained as a control.

c. Air-dry the cloth or swab and pack in clean paper or an envelope with sealed corners.

d. Do not use plastic containers.
Dry saliva- or urine-stained objects

a. Submit suspected small, dry saliva- or urine-stained objects to a crime laboratory.

b. Pack to prevent stain removal by abrasive action or packaging materials during shipping.

c. Pack in clean paper or an envelope with sealed corners.

d. Do not use plastic containers.
Saliva or urine stains from immovable objects

a. When possible, cut a large sample of suspected saliva or urine stains from immovable objects with a clean sharp instrument.

b. Collect an unstained control sample.

c. Pack to prevent stain removal by abrasive action or packaging materials during shipping.

d. Pack in clean paper.

e. Do not use plastic containers.
Semen stains

Liquid semen

1. Absorb suspected liquid semen onto a clean cotton cloth or swab.

2. Leave a portion of the cloth or swab unstained as a control.

3. Air-dry the cloth or swab and pack in clean paper or an envelope with sealed corners.

4. Do not use plastic containers.
Dry semen-stained objects

1. Submit small suspected dry semen-stained objects to a crime laboratory.

2. Pack to prevent stain removal by abrasive action or packaging materials during shipping.


4. Do not use plastic containers.
Semen stains from immovable object

1. When possible, cut a large sample of suspected semen stains from immovable objects with a clean sharp instrument.

2. Collect an unstained control sample.

3. Pack to prevent stain removal by abrasive action or packaging materials during shipping.


5. Do not use plastic containers.
Dried semen stains on immovable objects

1. Absorb suspected dried semen stains on immovable objects onto a clean cotton cloth or swab moistened with distilled water.

2. Leave a portion of the cloth or swab clean and place in clean paper or envelope with sealed corners.

3. Do not use plastic containers.
Seminal evidence from sexual assault victim(s)

1. Sexual assault victim(s) should be medically examined in a hospital or a physician’s office using a standard sexual assault evidence kit to collect vaginal, oral, and anal evidence.

2. Refrigerate samples and submit the evidence to a crime laboratory as soon as possible.
Collecting hair samples

Known hair samples

1. Thorough random samples should be taken from the head and pubic regions of a suspect (s) and victim (s).

2. Twenty-five full-length hairs, pulled and combed from different areas of the head and pubic regions, are generally considered an adequate representation of an individual’s hair characteristics.
Hairs in the hand of the victims

1. Hairs found in the hands of the victim usually belong to the victim.

2. Rarely are the hairs similar to the suspect’s known hairs; nevertheless, these must be collected and submitted for analysis.
Pubic and Head Combings

Pick up hair carefully with clean forceps to prevent damaging the root tissue.

Air dry hair mixed with suspected body fluids

Package each group of hair separately in clean paper or an envelope with sealed corners.

Do not use plastic containers and refrigerate and submit as soon as possible to a crime laboratory.
Methods of collecting Tissue, Bone, and Teeth samples

Pick up suspected tissues, bones, and teeth with gloved hands or clean forceps

Collect 1-2 cubic inches of red skeletal muscle.

Collect 3-5 inches of long bone such as the fibula or femur.
Collect teeth in the following order:

A. Non-restored molar.
B. Non-restored premolar.
C. Non-restored canine.
D. Non-restored front tooth.
E. Restored molar.
F. Restored premolar.
G. Restored canine.
H. Restored front tooth.
Place tissue samples in a clean, airtight plastic container *without* formalin or formaldehyde.

Place teeth and bone samples in clean paper or an envelope with sealed corners.

Freeze the evidence, place in Styrofoam containers, and ship overnight on dry ice.
Collecting DNA evidence from hats, shoes, sock, fingernails, weapons, and doors and windows

Hats

1. Package all hats in separate paper bags.
2. Use care when collecting baseball-style caps with adjustable plastic headbands.
3. The bands are an excellent source for fingerprints.

Shoes

1. An excellent source of fiber evidence, blood stains, and shoe print comparisons.
2. Shoes worn by a suspect can deposit fibers from a vehicle he or she exited at a crime scene and can also pick up fibers from the scene and then deposit them in another location.
Socks

1. Socks worn by a homicide victim can provide invaluable fiber and hair evidence.

2. Many times the victim is transported by vehicle. Contact with the interior surfaces of a vehicle can cause hairs and fibers to collect on the socks.

3. It may be necessary to obtain elimination samples of carpeting of the victim’s car or residence to avoid the possibility of coincidental match.
Fingernails

1. Use care when scraping or clipping the fingernails of a victim or suspect.
2. DNA on the hands or tools of the medical personnel can contaminate the material and influence the DNA results.
Weapons

Weapons recovered at a crime scene should always be searched for trace evidence before processing for fingerprints.
Doors and Windows

Doors and windows should be searched for trace evidence if they are possible points of entry or exit.
Considerations of documenting, collecting, packaging, and preserving DNA evidence

A. If DNA evidence is not properly documented, collected, packaged, and preserved, it will not meet the legal and scientific requirements for admissibility in a court of law.

B. If DNA evidence is not properly documented, origin can be questioned.

C. If DNA evidence is not properly collected, biological activity can be lost.

D. If DNA evidence is not properly preserved, decomposition and deterioration can occur.
E. When DNA evidence is transferred by direct or secondary (indirect) means; it remains on surfaces by absorption or adherence.

1. In general, liquid biological evidence is absorbed into surfaces, and solid biological evidence adheres to surfaces.

2. Collecting, packaging, and preserving DNA evidence depends on the liquid or solid state, as well as the condition of the evidence.

F. If evidence retains its original integrity once it reaches a laboratory, there is greater possibility of obtaining useful examinations results.
G. It may be necessary to use a variety of techniques to collect suspected body fluid evidence.

H. Follow department policy for document, collecting, packaging, and preserving all types of evidence.
Specific Crime Scene Searches

Burglary

- Observe exterior scene
- Area lighting
- Observe point of entry
- Observe interior scene
Search the burglarized structure to locate the burglar.

   a. The suspect is sometimes interrupted in his/her work and finds the path of escape blocked.

General description of interior scene affected.
   a. If the scene is complex and difficult to describe, make a sketch and take photographs.

Note any unusual features of the suspect’s M.O.
   a. Example: Suspect left valuable articles at scene, or has committed an extensive criminal mischief).

b. This information may assist in determining a suspect's age, ability, experience, and sophistication.
Evidence.
1. Collect, mark, and inventory the evidence, if found.

Stolen property inventory.

1. Include a complete description of the following:
   a. Size, make, color, type.
   b. Serial and model numbers.
   c. Identifying marks.
Checklist for burglary investigation:

11. Identify the window of opportunity.
12. Pawn shops/tickets; usual sources for recovering property.
13. Specific nature and value of items taken (serial numbers).
14. What was not taken?
15. How much destruction to the interior?
16. Profile the scene (juvenile vs. professional).
17. Thoroughly interview the victim thoroughly, obtain a detailed description of the missing property
Investigating an alleged robbery
A. Response to a robbery crime scene.

1. The chances of an officer involved in a shooting while handling a robbery call, is greater than in most crimes.

2. Use extreme caution when approaching the scene, even when advised that the suspect has fled. The location or route of flight may still involve a hazard to responding officers.

3. When proceeding to the scene, be alert for the following:
   a. Speeding vehicles and license plate information.
   b. People running or walking unusually fast.
   c. Nervous appearing pedestrians.
   d. Vehicles or pedestrians resembling descriptions provided by initial media broadcast.
Crime scene search:

Physical evidence at a robbery scene is usually minimal and every precaution must be taken to preserve that which does exist.
Checklist for robbery and aggravated robbery:

19. Surveillance cameras, if any.


21. Any counter surveillance seen?

22. Check immediate area for discarded evidence.

23. Preserve all evidence for prints.
Investigating an alleged theft

B. Determine value of property taken (PC 31.08).

1. The value of property or service is that represented by the fair market value at the time and place of the offense.

2. If fair market value cannot be ascertained, the value is the cost of replacing the property within a reasonable time after the theft.

3. If property or service has value that cannot be reasonably ascertained by the two methods previously mentioned, the property or service is deemed to have a value of more than $500 but less than $1,500.

4. Certain kinds of property have a clear value (i.e., automobiles).
Investigating an alleged physical assault.

4. For simple assault cases, the officer may advise the victim or complainant to:
   a. Determine if the situation can be settled without further police action or prosecution.
   b. Advise the procedure for a filing complaint, if such is desired.

5. The officer has the authority to make an arrest if he/she witnessed the assault.
   a. CCP 14.03.
Crime Scene

1. Do not touch anything until it has been photographed and/or sketched.

2. Photograph the victim's wounds.

3. Collect all physical evidence.

4. Reconstruct the crime.

5. All evidence must be collected, marked, and tagged.

6. Alleged assaults, by their very nature are violent cases, an officer must always be on guard for his or her own safety. A person at the scene, possibly mistaken for a witness may be potentially dangerous. Be alert, this person may possibly be the suspect.
Checklist for an assault, or aggravated assault:

17. Is this matter civil or criminal?

18. Apply family violence procedures, if applicable.

19. Obtain a waiver for medical records, if applicable.

20. Gather all trace and fiber evidence, if any.

21. Photograph the injuries again within 2-3 days.
Investigating an alleged sexual assault.

A. Sexual assault investigation.
   1. CCP 57 - Confidentiality of Identifying Information of Sex Offense Victims.

2. Determine if the crime scene has been altered or contaminated.
   a. Did the victim change clothing; discard ripped or soiled clothing; remove towels, bedding, or any other article?
   b. Did the victim shower or bathe prior to the officer's arrival?
   c. Did the victim clean up the scene (e.g., contaminate fingerprints or other items of evidentiary value)?
3. Note and document the victim's condition.
   a. Photograph injuries, if applicable.
   b. Identity of possible witnesses who may have left the scene.
   c. List all witnesses, even if only partial information is available.

4. Reconstruct the crime.
   a. Have the victim recount the suspect's route and actions.
   b. Isolate evidence to prevent contamination and destruction.
   c. Check the suspect's escape route for discarded evidence.
   d. Call the victim and witnesses' attention to any items that may have evidential value. Clarification or confirmation of evidential items will be needed for further investigation or court purposes.
   e. Photograph the crime scene and evidence, if applicable.
f. Identify, collect, and preserve the following evidence:

(1) Fingerprints/footprints.
(2) Clothing, bedding, towels that may possibly contain biological evidence.
(3) Items suspected of containing biological evidence should be permitted to dry at room temperature and should be loosely folded, and then wrapped in clean paper (not plastic).
(4) Binding material used to tie up the victim is usually cut at the bindings several inches away from the knot. The severed ends are tied together with string. Do not cut or untie knots: they may establish MO and/or link material to that found in suspect's possession.
(5) Weapon (s).
(6) Tool marks (forced entry).
Medical treatment (specimens)

a. Advise the victim where he/she is going and what is going to transpire.

b. Advise the victim to take a change of clothes or underclothes, if clothing will be taken for evidence.

c. Transport the victim to the hospital for medical treatment and medically supervise the collection of evidence of sexual assault. If available, consider using a plain vehicle if the victim so requests.

d. In accordance with medical protocol, the doctor will check the entire body for injuries.
e. Specimens:
Request slides even though the victim bathed or doused following the assault. **Male officers shall remain outside the examining room.** Female officers may remain in the room during the examination, if the victim desires.

(1) Vaginal slides (rape).

(2) Rectal slides (sodomy).

(3) Oral slides (oral copulation).

(4) Loose hairs.
f. Samples for comparison.

(This will be handled according to department policy.) The attending physician may give the following samples to officers as evidence:

(1) Vial of victim's blood for blood typing with preservative; should be refrigerated.

(2) Sample of victim's saliva for secretion and blood typing. Take vial of saliva and subsequently refrigerate or have subject chew on filter paper, blotting paper, clean gauze or cloth. Outline the area of the sample. Submit uncontaminated paper or cloth as control. Dry and package.

(3) Hair from the victim. Request approximately 20 strands from several areas of the head, as well as from the pubic area.
If a suspect is taken into custody:

a. Record spontaneous statements.
b. Separate each suspect.
c. Do not permit the suspect(s) into the crime scene area. If the suspect was arrested inside, immediately remove him/her from the scene.
d. Prevent communication between the suspect(s), victim(s), and witness(s), unless absolutely necessary.
e. Photograph the suspect(s) if there is evidence of injury or torn/stained clothing, which may be of evidentiary value.
f. Preserve and collect the evidence found on the suspect(s) (e.g., semen/blood stains, stolen property, and other evidence).
g. Blood and urine samples should be taken for alcohol and drug analysis following consent.
h. If clothing is described, or if of evidentiary value, remove from the individual and book as evidence.
WATSON... I DETECT THAT WE'RE TOTALLY SKINT!

Sherlock Homeless

IT'S AN ALUMINIUM IN-TRAY, MY DEAR WATSON

"A lemon tree, my dear Watson."

NB