

Operational search activity

Crime Scene Investigation



Outline

- **Definitions:**
- **Objectives:**
- **Processing the crime scene;**



Crime Scene Vocabulary

A CRIME : Any illegal act or any act against the law

Two major categories of criminal activities having crime scenes:

property crimes (larceny, burglary, auto theft)

crimes against persons (assault, battery, sexual assault, robbery, murder)

- **Evidence** ; Anything that bears on a relationship between a crime, victims and suspects.
- **physical objects**: prints, body fluids or hair or fibers etc.
- **Testimonial evidence**: oral or written statements given to police as well as testimony in court by people who witnessed an event.
- **Chain of Custody** : The continuity of custody for items collected as physical evidence to prove that items offered as evidence during a trial are the same items collected at the crime scene processing.



Defining the Crime Scene

Where is the crime scene?

CRIME SCENE: Any physical location in which a crime has occurred or is suspected of having occurred.

Can be classified by:

- Location of Criminal Activity
- Size of Area
- Type of Crime Committed
- Physical Location of the Crime



Defining the Crime Scene

Location of Criminal Activity

- **Primary** = where the original crime occurred
- **Secondary** = subsequent crime scenes

Let's look at an example

Primary vs. Secondary



Tom



Jerry Baio



Primary vs. Secondary



Tom



Primary Crime Scene



Jerry Baio



Primary vs. Secondary



Tom



Jerry Baio



Secondary Crime Scene



Defining the Crime Scene



Size of Crime Scene

- **Macroscopic** = one location, composed of many microscopic crime scenes
- **Microscopic** = focuses on specific type of physical evidence

Macroscopic vs. Microscopic



Tom



Jerry Baio

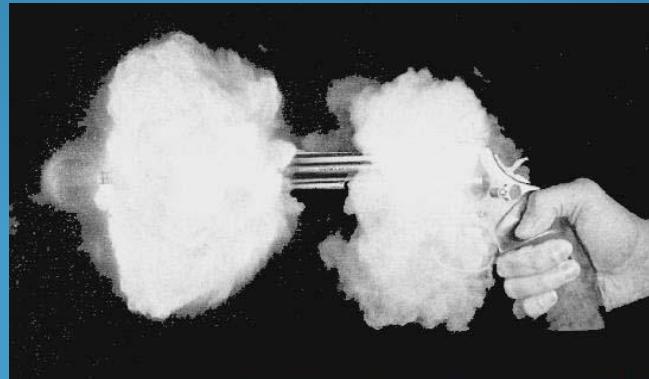


Macroscopic = McDonalds Area
(Tom's body, Chachi, the dumpster, etc.)

Macroscopic vs. Microscopic



Tom



GSR on Baio's hand



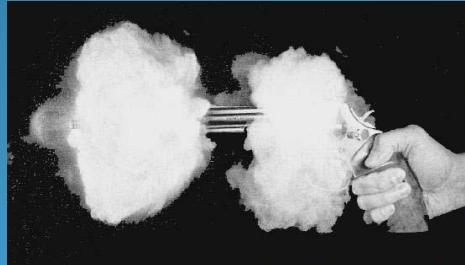
Jerry Baio

Microscopic

Macroscopic vs. Microscopic



Tom



Tom's Leg Wound



Scott Baio

Microscopic

Defining the Crime Scene

Type of Crime Committed

Homicide, Robbery, Sexual Assault, etc.

Physical Location of Crime Scene

Indoors, Outdoors, Vehicle, etc.

Objectives of CSI

Forensic science begins at the crime scene.

- CSI is a **Planned, Coordinated, Legal** search to **recognize, document, and collect** evidence to the crime
- **Protection:** of evidence



Solving the crime: Establish elements of a crime

- **Where** crime committed
- **How** crime committed
- **When** committed
- **Why** committed
- **Who** committed it



Processing the Crime Scene



CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

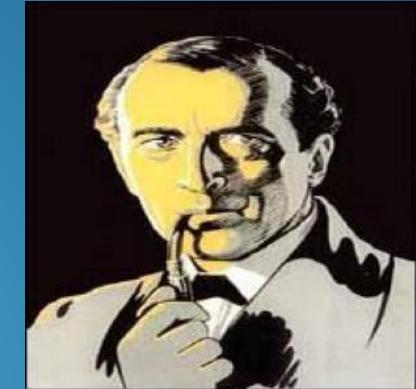
Crime Scene Team

- a group of professional investigators, each trained in a variety of special disciplines.
- Team Members
 - First Police Officer
 - Field Evidence Technician
 - CSI UNIT**
 - Medical Examiner (if necessary)



Crime Scene Team

Evidence Team or **CSI UNIT**



- Team Leader
 - Assume control and access
 - Determine search pattern
 - Coordinate with groups involved
 - Continuously evaluate work
 - Release crime scene
- Photographer and Photographic Log Recorder
- Sketch Preparer
- Evidence Recorder/Evidence Recovery Personnel
- Specialists

Crime Scene Team

Evidence Team or **CSI UNIT**

Evidence Recorder/Evidence Recovery Personnel

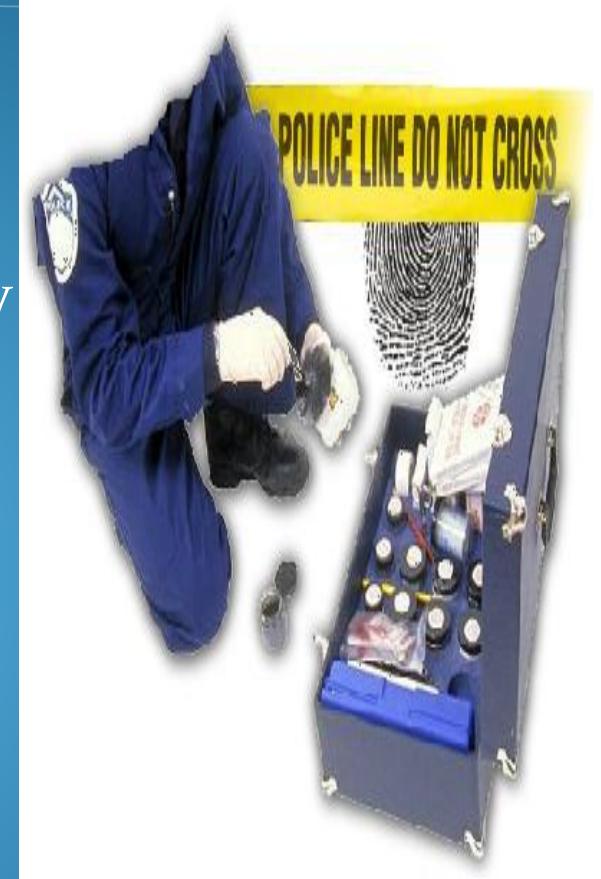
- Describe evidence location
- Package evidence
- Maintain evidence log
- Ensure proper safety collection
- Maintain chain of custody

Specialists

May include:

Anthropologist
Bomb technician
Engineer
Medical examiner
Surveyor Etc.

Blood expert
Criminalist
Entomologist
Odontologist



BASIC EQUIPMENT FOR CSI



BASIC EQUIPMENT FOR CSI

- *FINGERPRINT EQUIPMENT*
- *CASTING EQUIPMENT*
- *PHOTOGRAPHIC EQUIPMENT*
- *EVIDENCE PACKAGING*
- *HAND TOOLS*



Legal Considerations at a Crime Scene

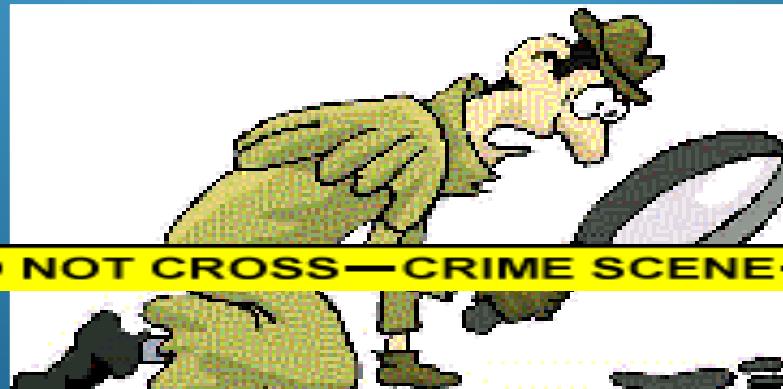
- ❑ The removal of any person or evidence from a crime scene must be done in conformity with **Forth Amendment** privileges.

Warrant or no warrant

Therefore, search warrants are required.

A warrantless search only be conducted under the following circumstances:

- ❑ Existence of an emergency
- ❑ To prevent immediate loss or destruction of evidence
- ❑ Search of a person or property of the person during his arrest
- ❑ Search an seizure with the consent of the persons involved



The 7 Steps of Crime-Scene Investigation



What's the first thing to do at a crime scene?



1. Secure and isolate crime scene
2. Preliminary exam
3. Record the scene
4. Conduct Systematic Search for Evidence
5. Collect and Package Physical Evidence
6. Maintaining Records ,final survey & Release
7. Analyzing the Evidence & Reconstruction of scene

Step 1:Secure and Isolate Crime Scene

Responsibility of first officer on scene:
steps to preserve and protect scene:

- First priority - medical assistance
- Exclude all unauthorized personnel
- Establish and Control entry / exit points
- Ropes, Tape, Barricades and Guards strategically placed.



CRIME SCENE DO NOT CROSS

A Assess the crime scene
D Detain the witness
A Arrest the perpetrator
P Protect the crime scene
T Take notes



Step 2:The Preliminary Exam

Once the scene is secure and lead investigator arrives – what happens?

- Boundaries of Scene determined
 - Does the area being searched need to be expanded?
- Establish perpetrator's path of entry and exit
- Obvious items photographed and documented
- Initial walk through to gain overview and develop strategy for systematic search

Step 3:Record the Scene

- Investigators have a limited time to work a crime site in its untouched state.
- Such records useful during the investigation & required at a trial in order to document the condition of the crime site and to delineate the location of physical evidence.
- Every step of the investigation should be documented thoroughly with an appropriate method.



Step 3:Record the Scene

- Three methods of crime-scene recording:
- Ideally all, should be used

1. **Photograph**
2. **Sketch**
3. **Notes**
4. +/- **Video/taping**





Photography

Crime scene should be photographed completely :

- The crime scene should be unaltered, unless injured people are involved.
- Objects must not be moved until they have been photographed from all necessary angles.
- If things are removed, added, or positions changed the photographs may not be admissible evidence.





Photography

Crime scene should be photographed completely :

- If crime scene includes a body:
 - Take photos to show body's location & position relative to the whole crime scene
 - Take close-up photos of injuries & weapons lying near the body
 - After the body is removed, photograph the surface underneath.
- When size is significant, use a ruler or other measuring scale
- Digital cameras preferred examination in fine detail.





Photography

Crime scene should be photographed completely :

□Three Types of Photographs

1. Overall:

1. Outside and inside
2. All directions
3. All four walls/ all rooms
4. Doors/ windows
5. Orientation of evidence with and without labels

2. Midrange

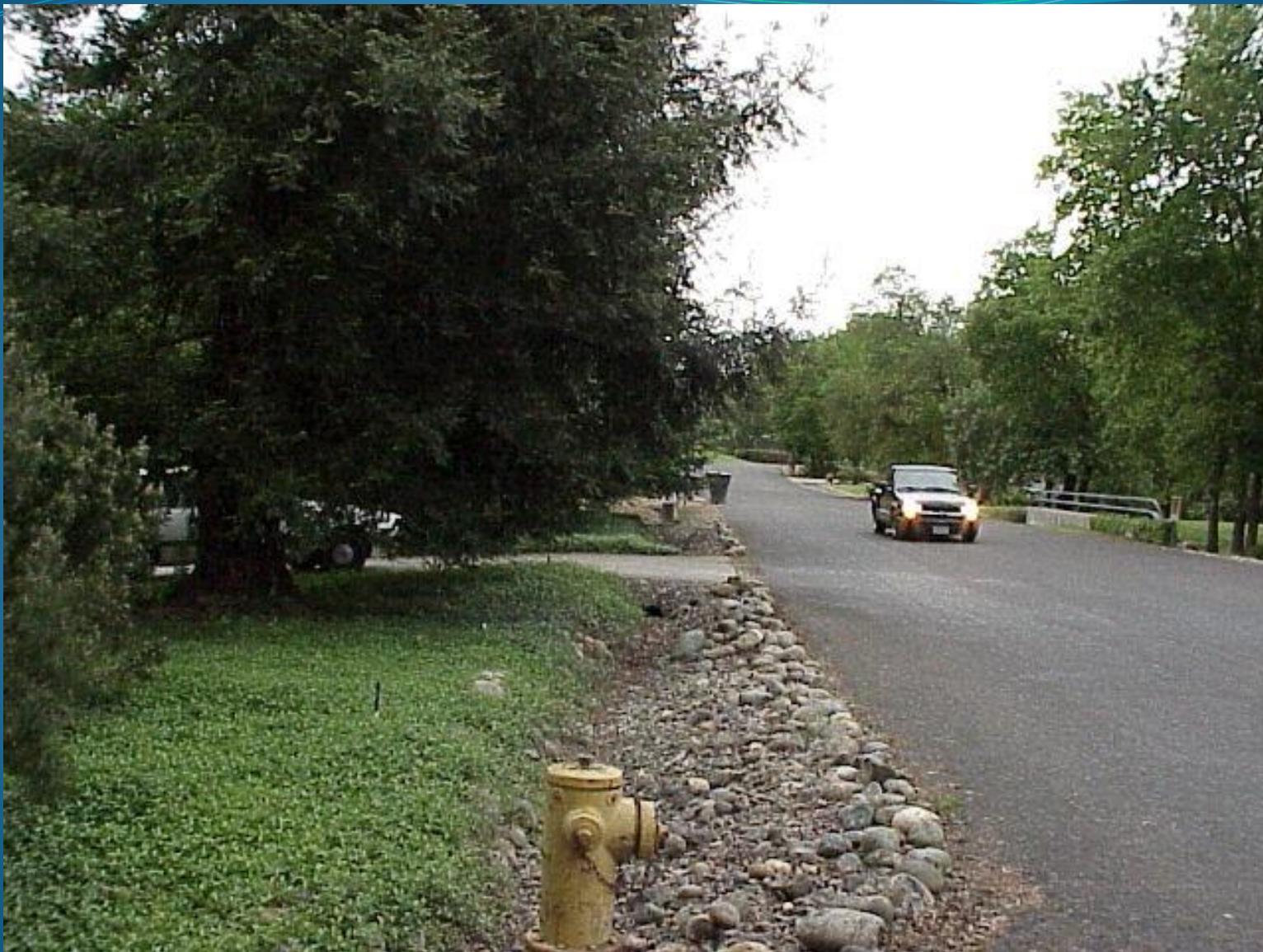
3. Close up



























PHOTOGRAPHIC LOG

LOCATION: Master Bedroom

DATE: 03-17-07

CASE IDENTIFIER: B-2345

PREPARER/ASSISTANTS: Sgt. Dwyer

Off. Torres

CAMERA: #12

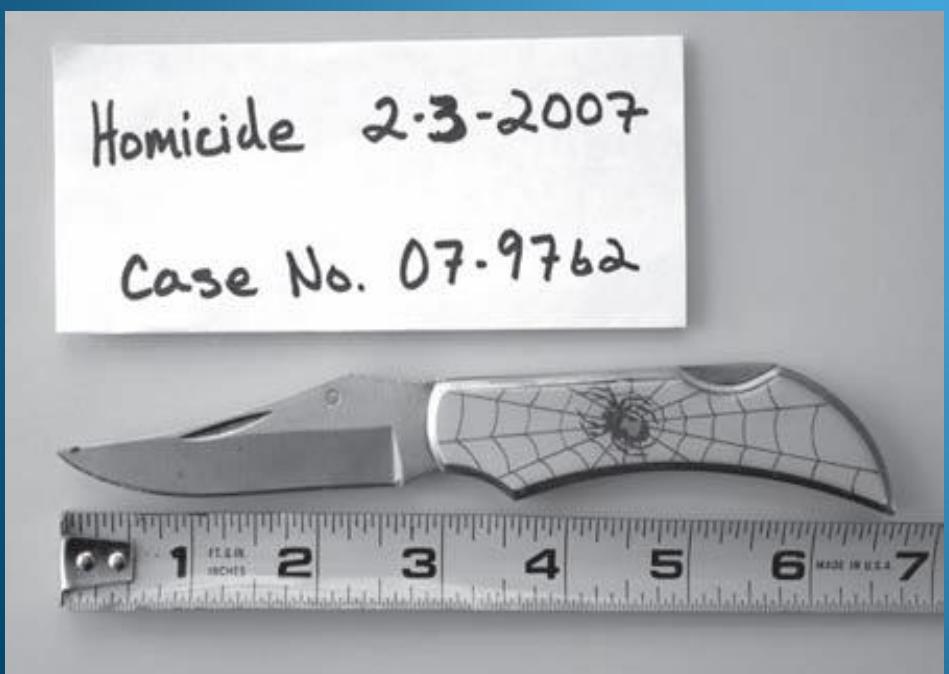
TYPE OF FILM

AND RATING: Kodak/400/24

REMARKS: Roll #1

PHOTO #	DESCRIPTION OF PHOTOGRAPHIC SUBJECT	USE OF SCALE	MISCELLANEOUS COMMENTS	SKETCH (IF APPLICABLE)
1.	Long shot - room (rt corner angle)		All photos from left side of victim	
2.	Mid shot - victim			
3.	Mid shot - head			
4.	Close shot - wound (entrance)			
5.	Mid shot - wound			
6.	Mid shot - left hand & gun			
7.	Close shot - gun			
8.	Long shot - room (lft corner angle)		All photos from right side of victim	
9.	Close shot - body			
10.	Close shot - head			
11.	Close shot - wound (exit)			
12.	Mid shot - note			
13.	Close shot - note			
14.	Mid shot - head			
15.	Long shot - room (from door)		All photos from victim's feet	
16.	Mid shot - body (from door)			
17.	Mid shot - head (from door)			
18.	Close shot - head			
19.	Close shot - wound (entrance)			
20.	Mid shot - left hand & gun			
21.	Mid shot - body			
22.	Long shot - room (rt corner angle)		From right side of victim	
23.	Long shot - room (lft corner angle)		From right side of victim	
24.	Close shot - head		From right side of victim	





Sketches

Once photos are taken, sketch the scene.

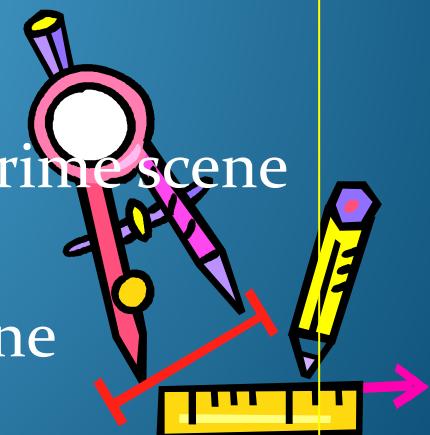
□ **Definition:** The notes and measurements one takes at a scene which shows the key physical measurements or **map** of the scene and its evidence location.

□ **Purpose**

To document relationship of evidences to crime scene

To illustrate to others the crime scene

To provide an overall perspective of the scene



Sketches

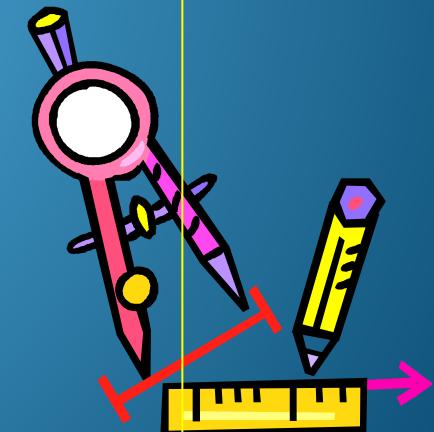
Once photos are taken, sketch the scene.

- Rough Sketch**- an accurate simple depiction of scene dimensions and location of all items of interest

- Final Sketch**- drawn with care and Prepared with the aid of templates, hand drawn or CAD allowing 3D pictures

Must Include:

- Location Time Date
- Incident
- Sketched By Measurement Scale Key
- All Entry and Exit opportunities
- North Arrow



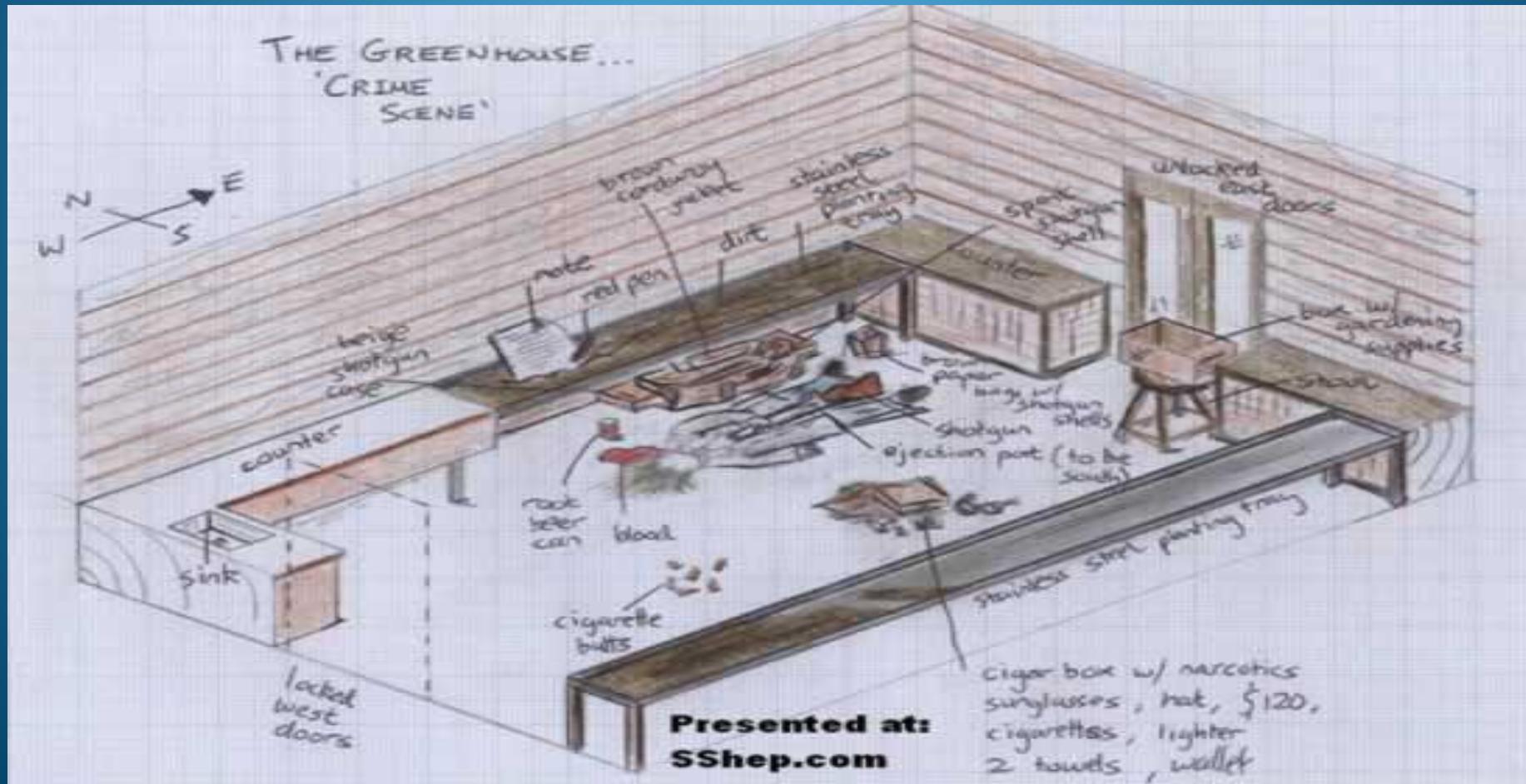
Sketches

ROUGH

SUPPLEMENTARY DIAGRAM REPORT											
AGENCY:		NAME LAST		FIRST		MIDDLE		REPORT TITLE		PAGE ____ OF ____	
<input checked="" type="checkbox"/> TPD		<input type="checkbox"/> PSCO		<input type="checkbox"/> OTHER							
REPORTING TIME & DATE 11/16		SUBJECT OF HARSHFIELD, GENEIE		ADDRESS STREET 908 S GRANT		CITY STATE ZIP		INVESTIGATION		PHONE	
REPORT PROCESSING DISTRIBUTION DATE 11/16											
(RECORDS, PHOTOCOPY, ETC.) INDEXED by											
Date											
APPROVAL											
MICROFILMED Date _____ by _____											
COPY TO:											
REVIEWED BY:											

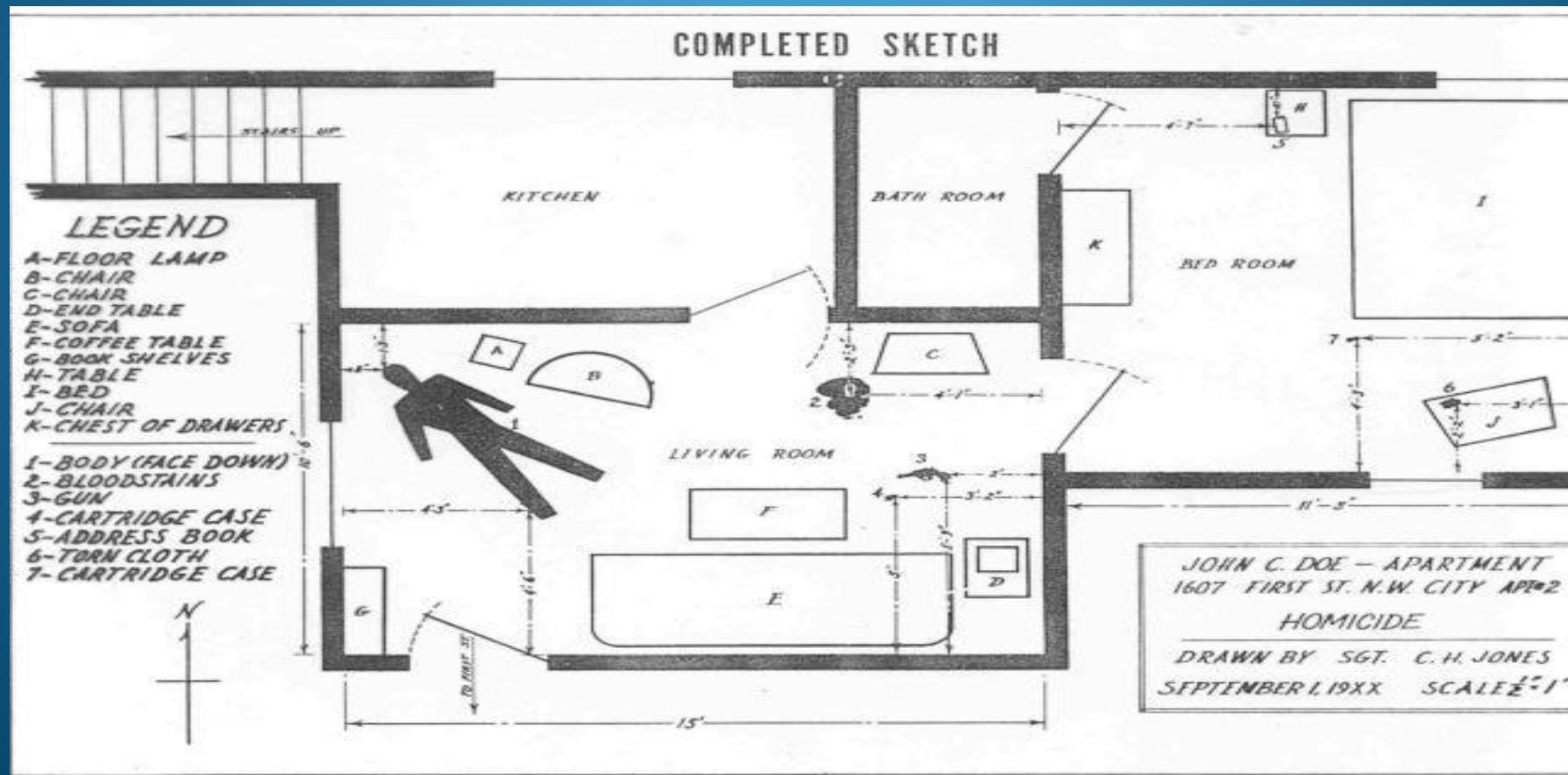
Sketches

Finished

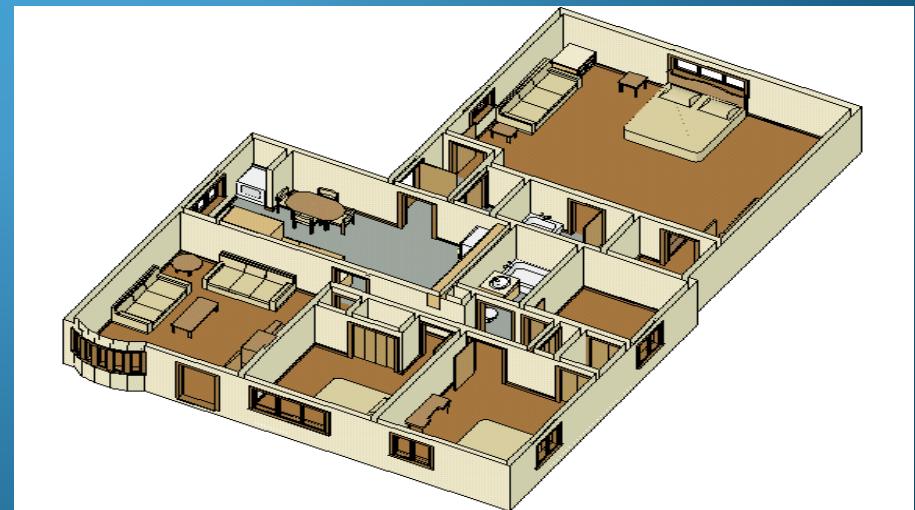
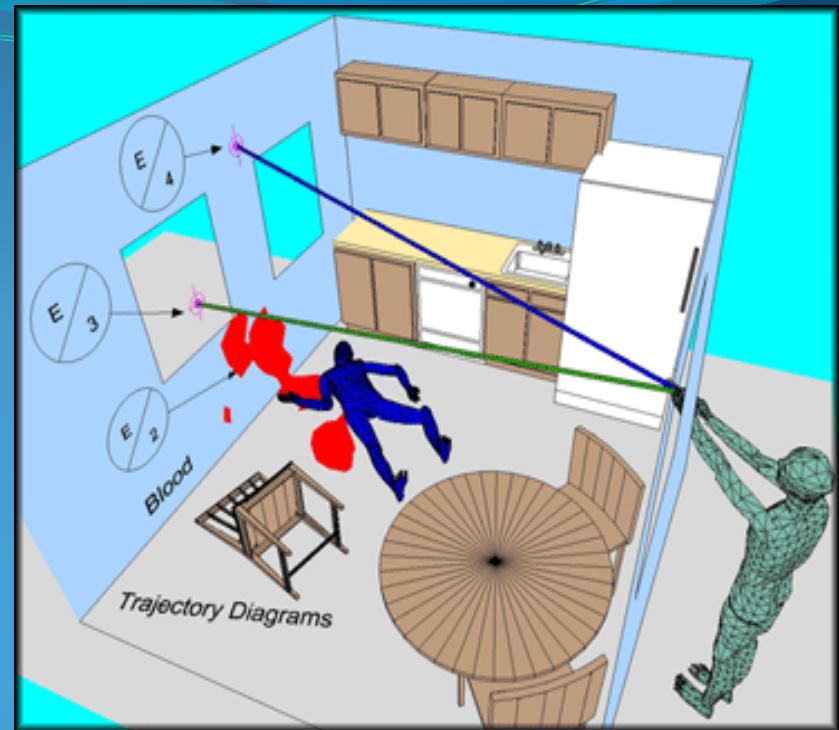
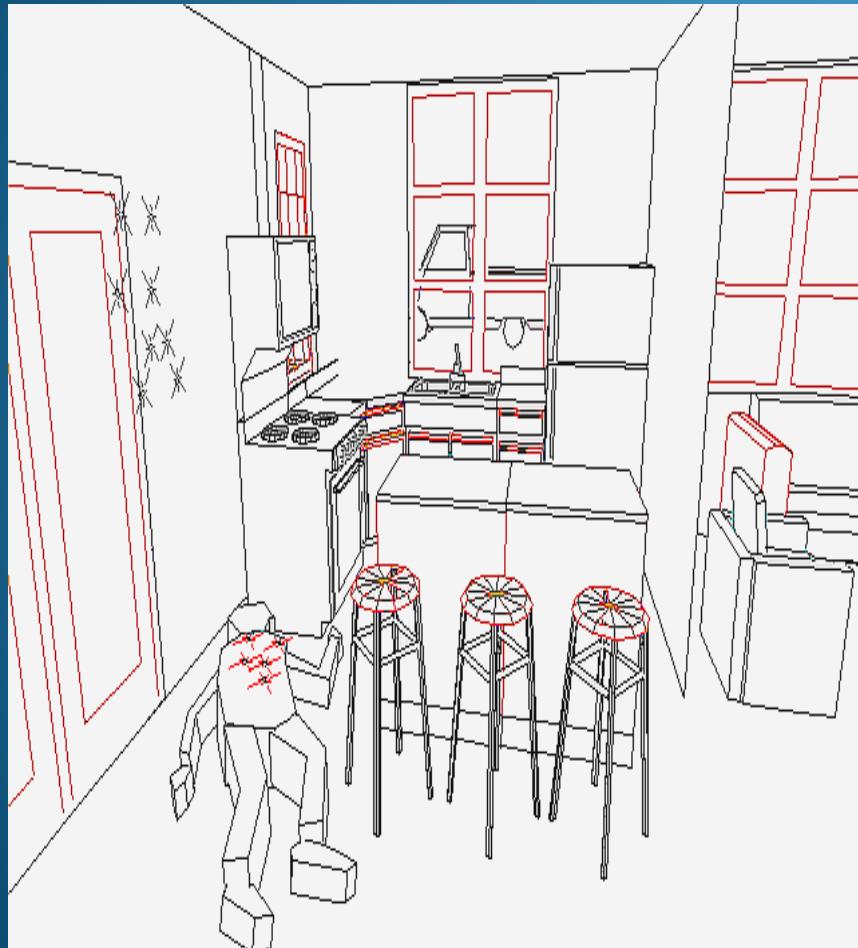


Sketches

Finished



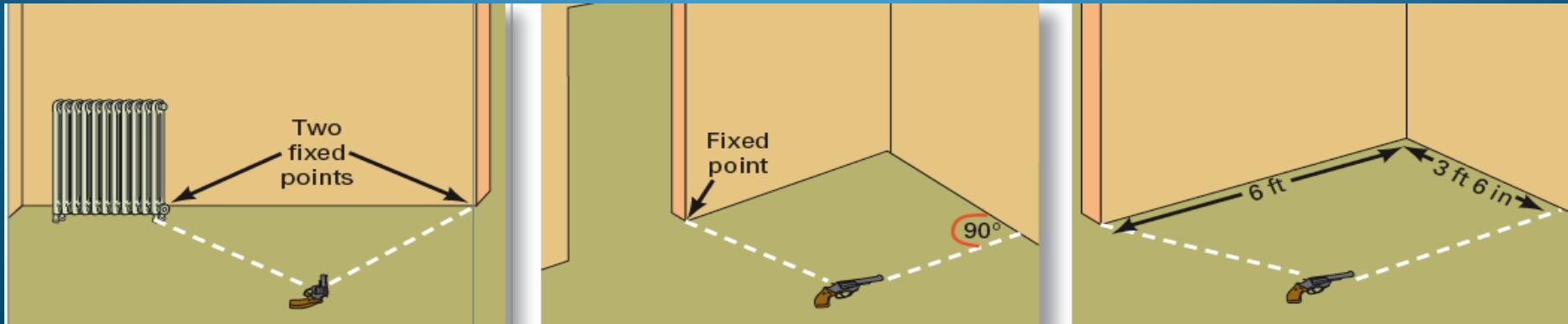
Finished Sketch (CAD)



Measurement Techniques

The exact location of objects can be obtained by the following methods:

- Rectangular :single fixed point & a 90° wall
- Triangulation using two fixed points
- Baseline method , Transecting
- Polar Coordinates
- XY axis method



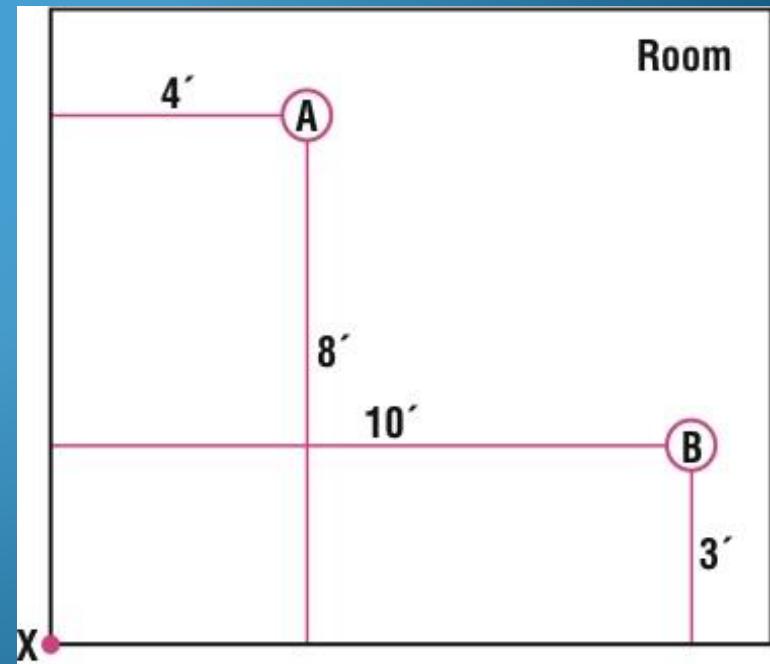
Measurement Techniques

The exact location of objects can be obtained by the following methods:

Rectangular-coordinates method

- involves measuring the distance of an object from two fixed lines at right angles to each other.

- It is often used to locate an object in a room.

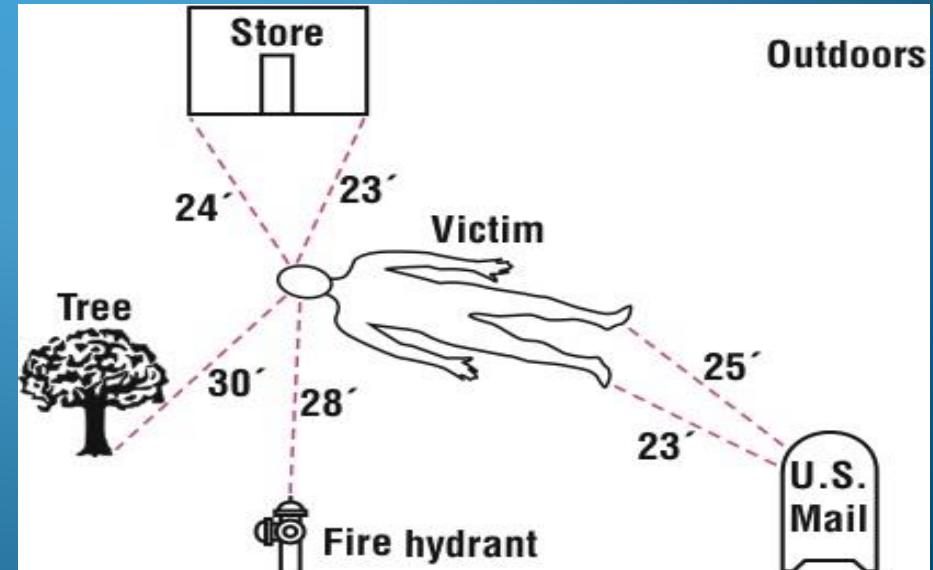
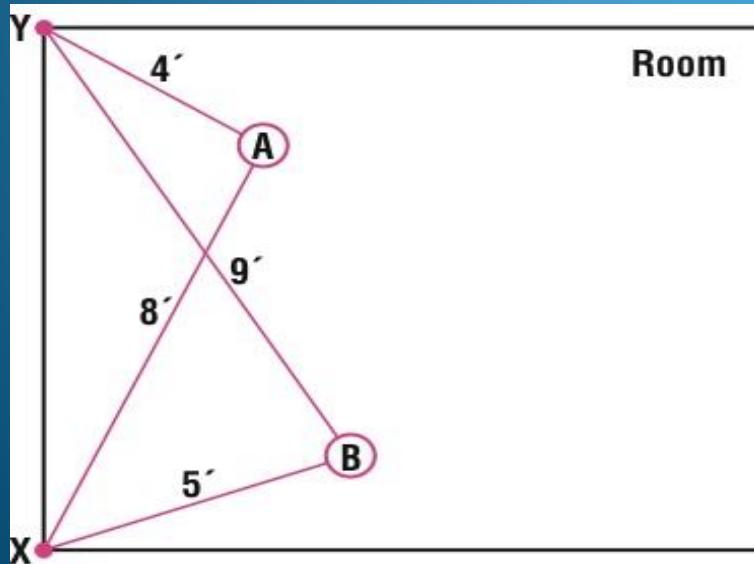


Measurement Techniques

The exact location of objects can be obtained by the following methods:

Triangulation method

- requires measuring the distance of an object along a straight line from two widely separated, fixed reference points.

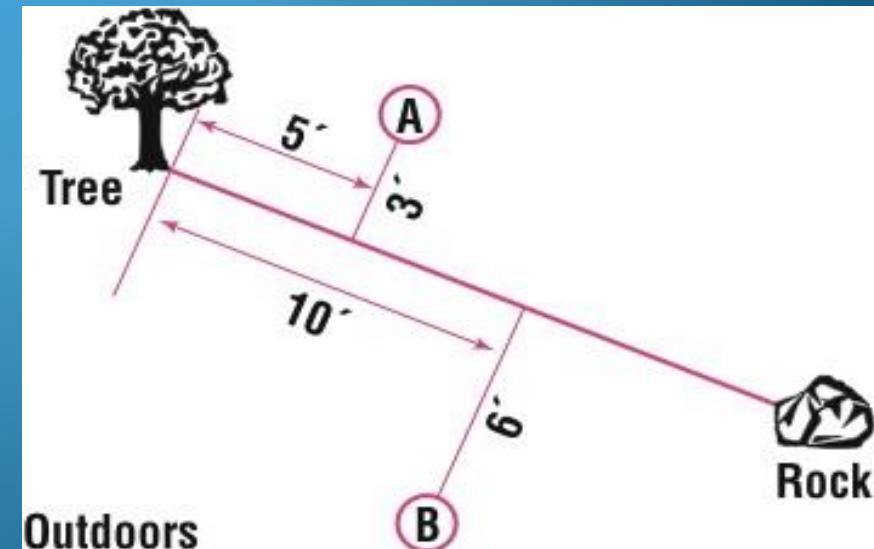
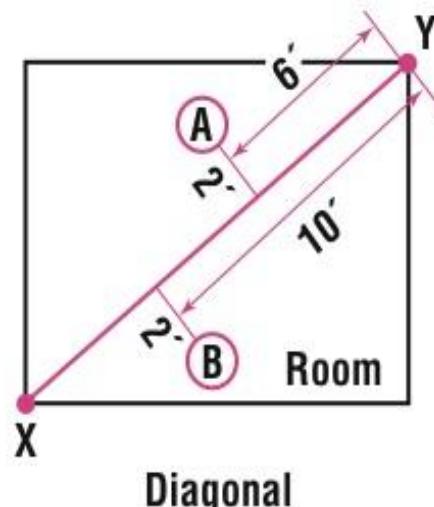
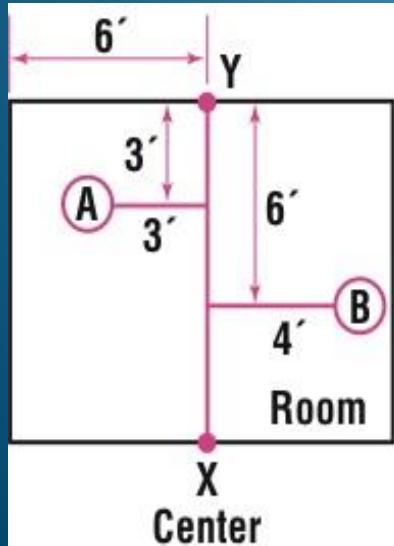


Measurement Techniques

The exact location of objects can be obtained by the following methods:

Baseline method

- takes measurements from a single reference line, a baseline, which can be established by using a length of string, a chalk line, or some convenient means.

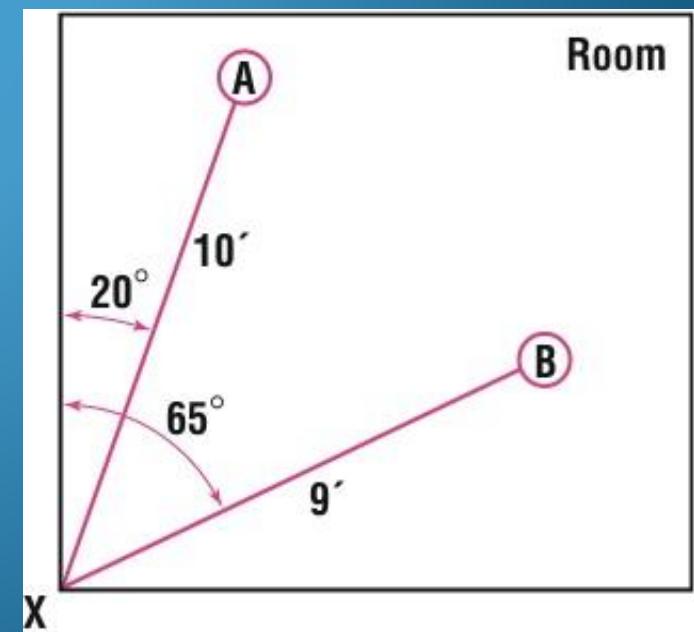
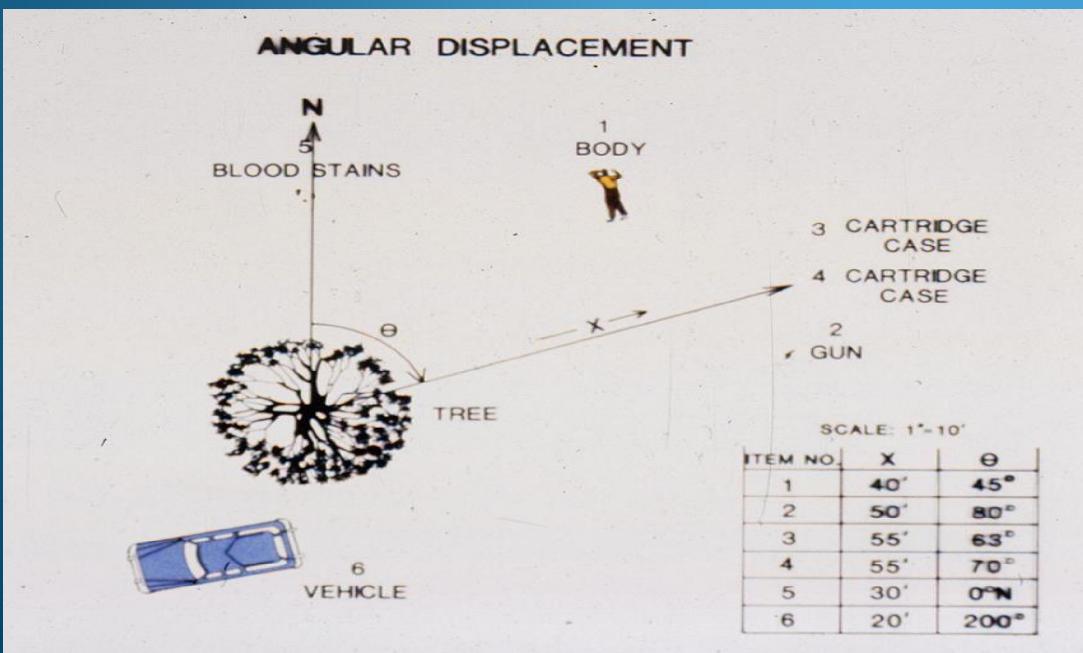


Measurement Techniques

The exact location of objects can be obtained by the following methods:

Polar Coordinates “ angular or compass point”

- Central point, precise angles and distance



Measurement Techniques

The exact location of objects can be obtained by the following methods:

MAPPING TECHNOLOGY

- The latest technology :Nikon Tsunami with computer.
- The exact location of all crime evidence determined and directly loaded into a computer to produce a crime scene map.
- Cost = \$35,000 for the set.



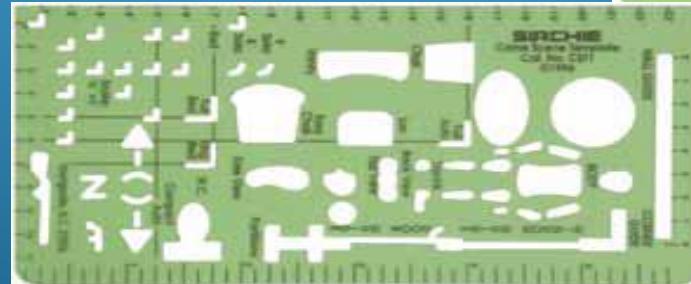
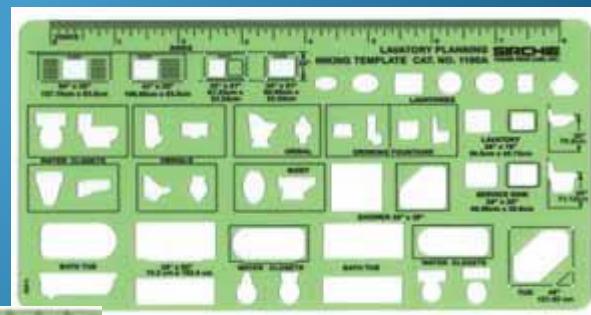
Measurement Tools

- Rulers
- Tape Measures
- Vehicle Odometers
- Infrared, laser, sonic rulers
- Geographic Positioning Systems
GPS : Baseline set a north/south line and measures each piece of evidence from this line,
Appropriateness, Accuracy



Set a north/south line from a datum point established by a GPS.

Crime Scene Sketch Kit



Notes

- Constant activity throughout the investigation
- Notes must include:
 - detailed written description of the scene
 - Mention every piece of physical evidence collected and rationale for collection.
 - Records time that each piece of evidence was discovered.
 - Record who discovered the evidence and how they packaged it
- This may be the only source of memory recall after the crime scene
- Tape-recording the notes is a good idea
- Narrating a video as the scene is investigated is an even better idea
- Video or audio must still be transcribed into a written document



Step 4: Search the Scene

- The search for physical evidence at a crime scene must be thorough and systematic.
- The search pattern depend on the size and locale of the scene and the number of collectors participating in the search.
- Physical evidence can be anything from massive objects to microscopic traces.

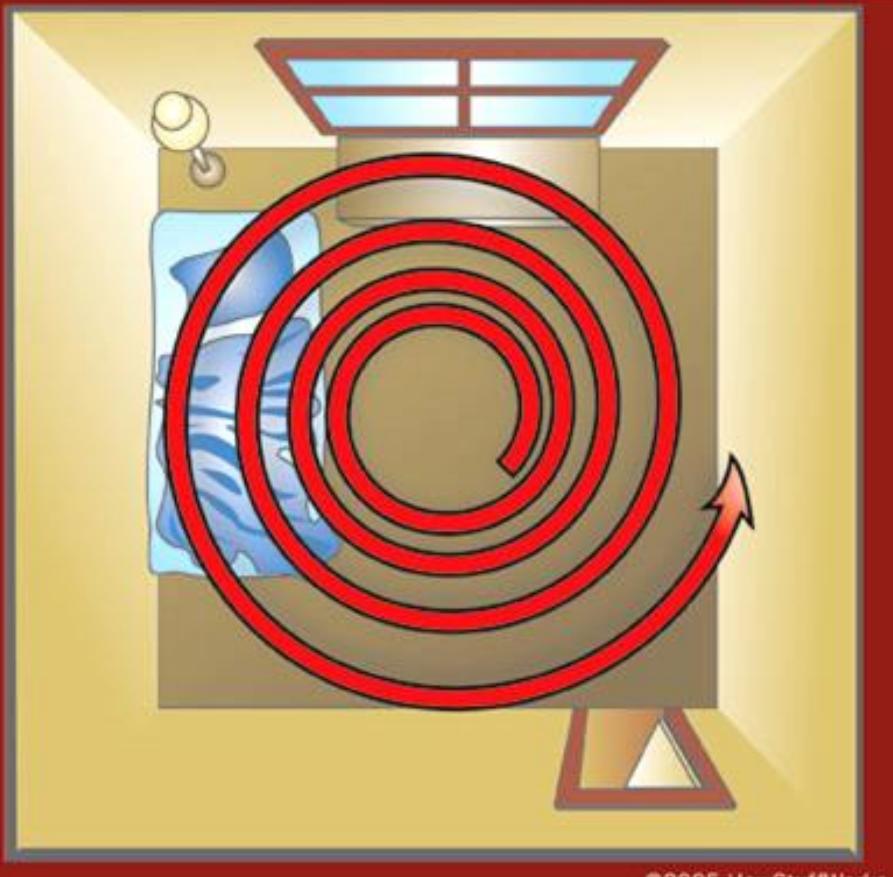
Search Patterns

Four types

- Spiral - Used when there's only one investigator or under water
- Strip or Lane – Parallel rows
- Grid- Crisscross
- Quadrant- Area is divided into 4 quarters and each is searched individually.

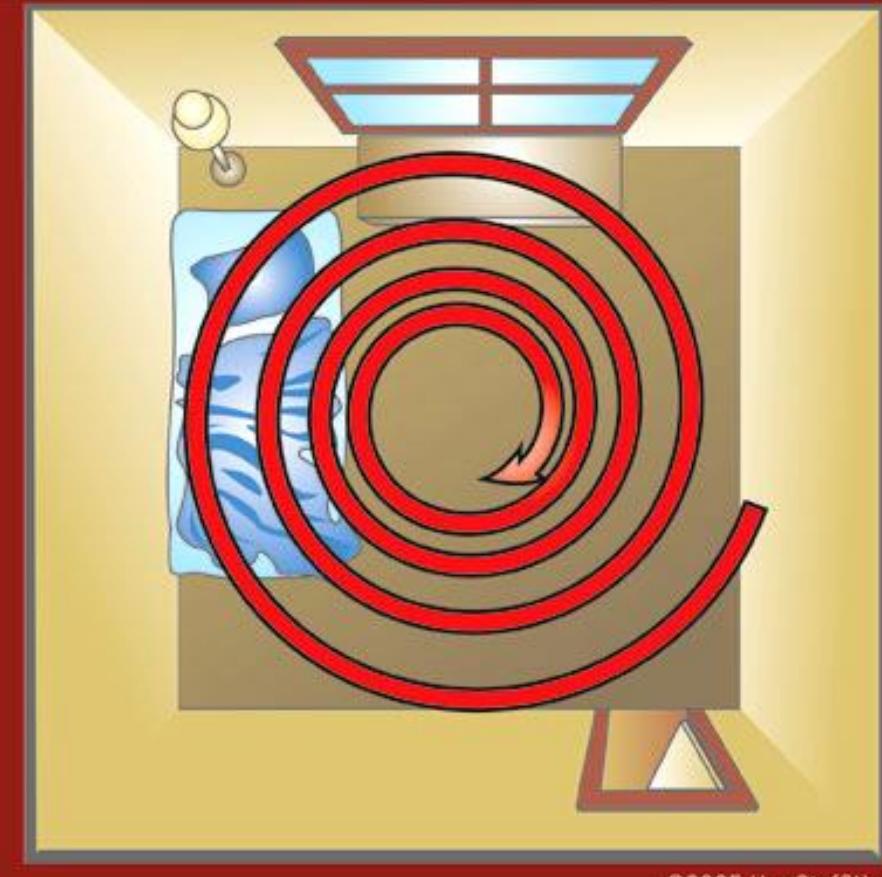
Spiral Search

How CSI Works Search Pattern: Outward Spiral



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How CSI Works Search Pattern: Inward Spiral



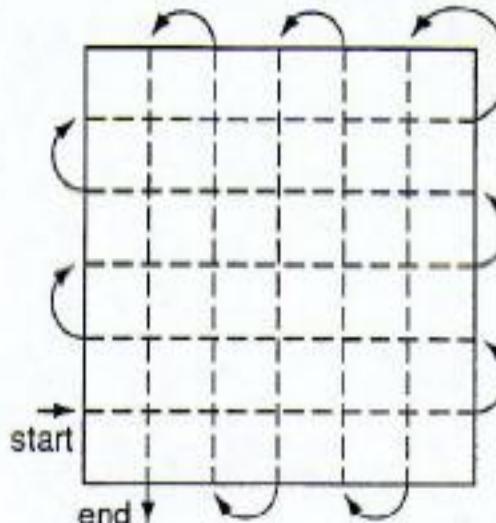
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Grid

How CSI Works Search Pattern: Grid



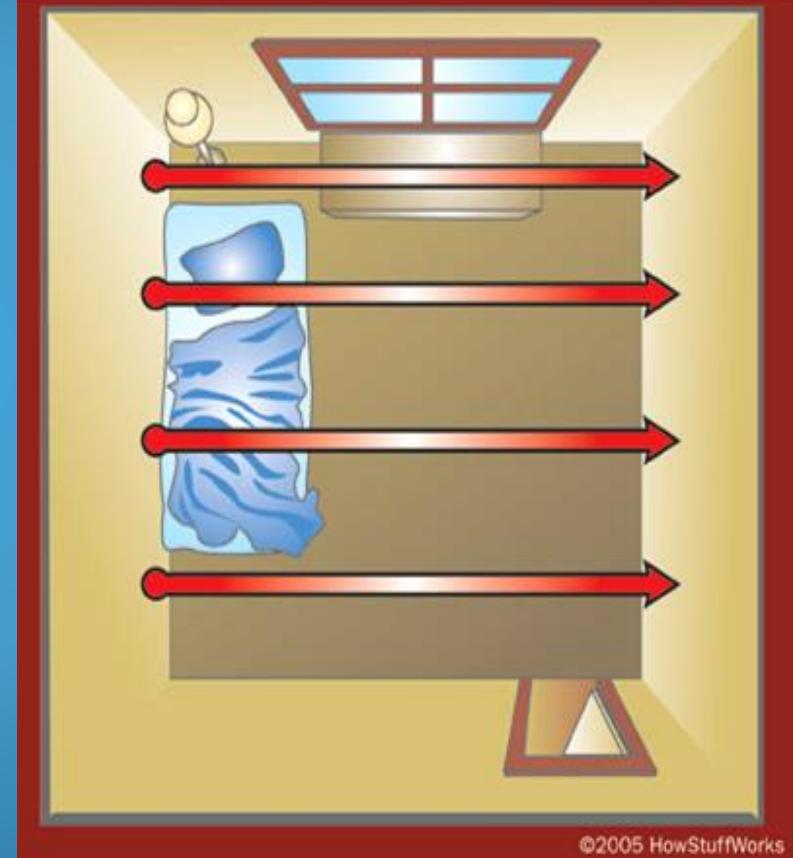
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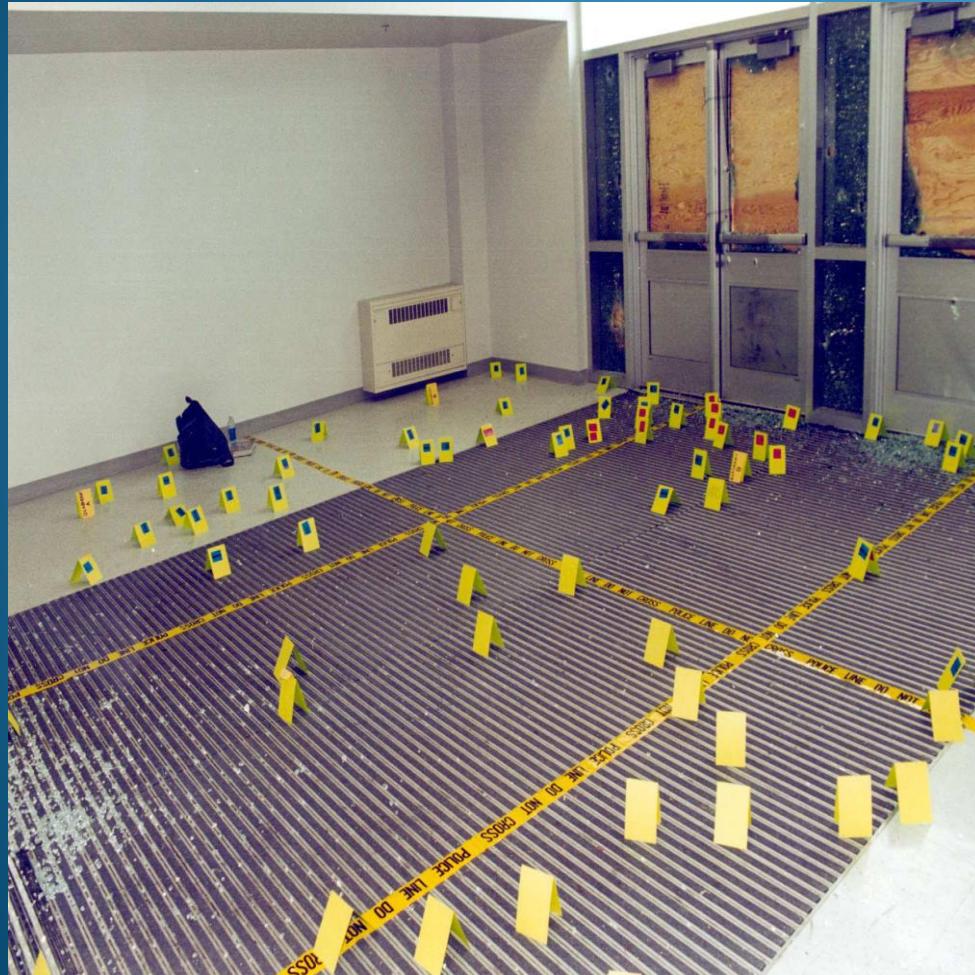
Parallel or lines



How CSI Works Search Pattern: Parallel



Quadrant or zone



How CSI Works Search Pattern: Zone



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Quadrant or zone



How CSI Works Search Pattern: Zone



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Step 5: Collect and Package Physical Evidence

- Physical evidence must be handled and processed in a way that prevents any change from the time it is removed to the time it arrives at the lab.
- What are some sources of contamination?

Breakage

Evaporation

Accidental Scratching or bending

Loss through improper Careless packaging

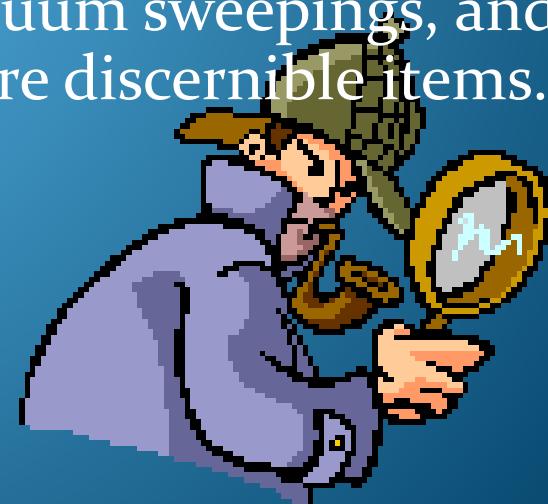
Improper handling



Step 5: Collect and Package Physical Evidence

- What to Collect:

- Anything from a massive object to a microscopic trace
- Often, many items of evidence are clearly visible but others may be detected only through examination at the crime laboratory.
- For this reason, it is important to collect possible carriers of trace evidence, such as clothing, vacuum sweepings, and fingernail scrapings, in addition to more discernible items.



Step 5: Collect and Package Physical Evidence

- Deceased Victims: Pathologist will collect:
 - Clothing
 - Fingernail scrapings
 - Head and pubic hairs
 - Blood (for DNA typing)
 - Vaginal, Anal, and Oral Swabs (Sex Crimes)
 - Recovered bullets from body
 - Hand swabs from shooting victims
 - After burial, collection of evidence from the body is difficult if not impossible



Step 5: Collect and Package Physical Evidence

Collection of Evidence

- Investigators must wear gloves, protective shoe coverings and hair nets to prevent contamination

- Four main packaging categories:
 - Trace (fibers, hairs, skin cells),
 - Non-Biological (soil, paper),
 - Biological (body fluids, insects)
 - Arson



Step 5: Collect and Package Physical Evidence

Collection of Evidence

Collection Methods:

- ❑ Whenever possible, items should be collected “intact,” otherwise a sampling method is used
- ❑ Sampling methods include using forceps, tape lifts, or vacuuming the item
- ❑ Biological material may be sampled by cutting, swabbing or scraping
- ❑ Shaking or scraping the item should be done in a lab environment

Numbering & Description Methods:

- ❑ Numbering, a brief description marked on the packaging and in the evidence log
- ❑ Numbers at the scene, on the packaging, and in the evidence log should all agree



Step 5: Collect and Package Physical Evidence

Collection of Evidence

- ❑ Each piece of evidence is packaged, labeled and sealed
- ❑ Removal of All evidence must be in accordance with appropriate search and seizure protocols.

❑ Standard/Reference Sample:

For example, blood-stained evidence must be accompanied by blood samples from both the victim as well as the suspect(s), Same is true with hair, fibers, fingerprints soil, etc



Step 5: Collect and Package Physical Evidence

Chain of custody

- Continuity of possession
- Established when evidence is presented in court
- Info. Collected: initials, date, location of evidence
- To avoid confusion and retain control at all times – individuals on chain of custody should be kept to a minimum.



Step 5: Collect and Package Physical Evidence

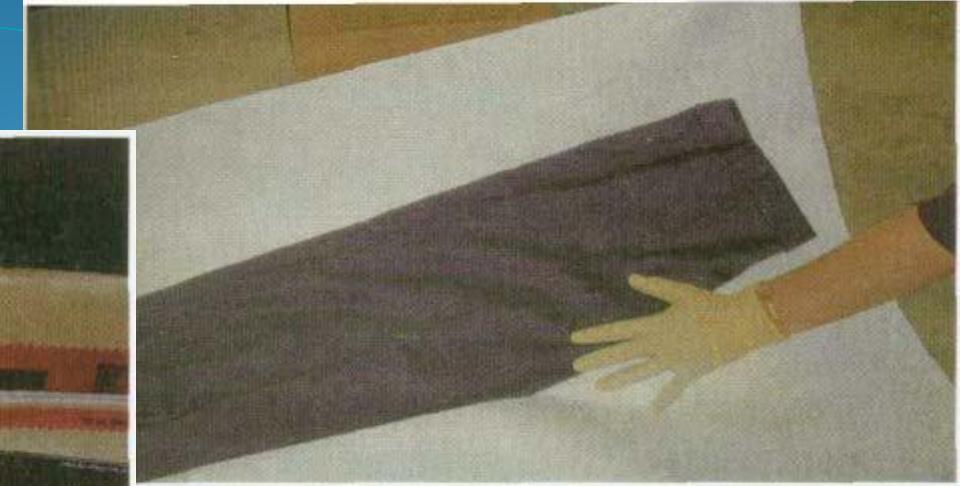
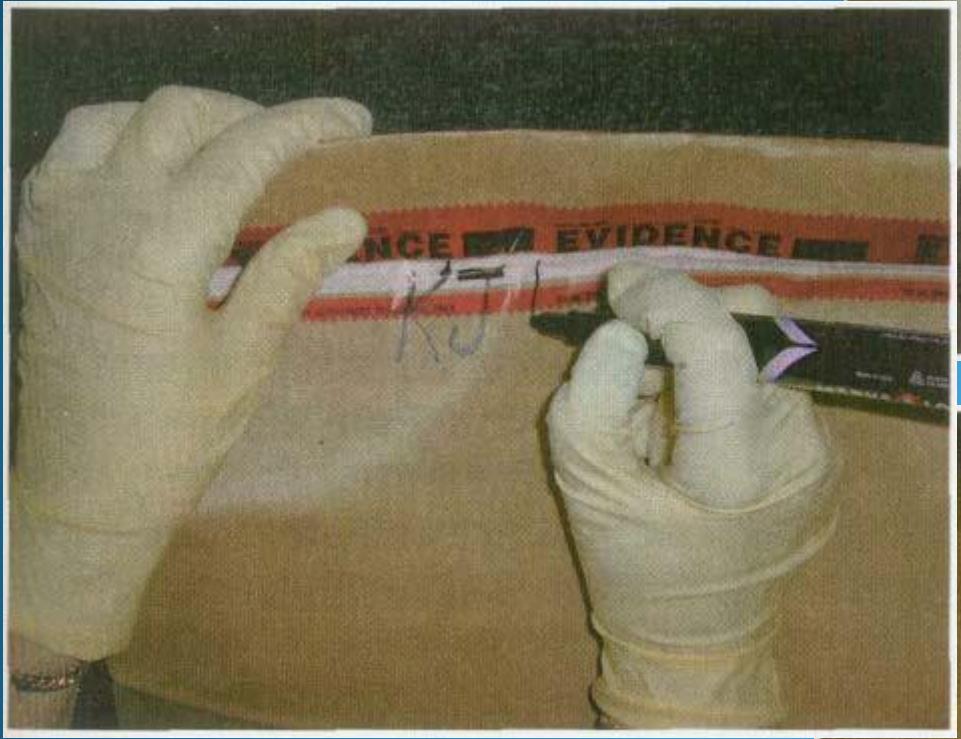
Laboratory Submission

- A specific “Request for Analysis” form is completed for evidence items submitted for forensic lab analysis

- The form should have the following information:
 - Type of incident
 - Date and time of incident
 - A brief description of the case facts
 - Names of victim(s) and suspect(s)
 - A list of items being submitted
 - Types of analyses or tests required
 - Submitting agency & investigator contact information

- Maintaining *Chain of Possession* is of paramount importance.

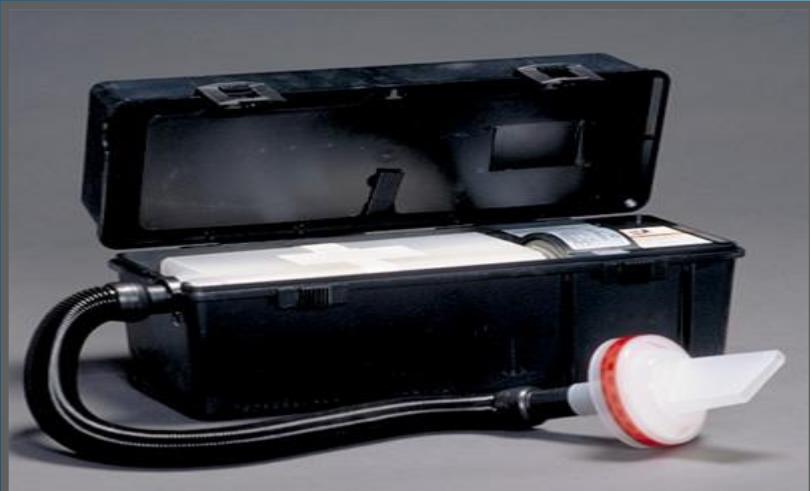




SEARCHED	INDEXED	SERIALIZED
Case: _____ Date: _____		
Official Seal—Do Not Remove		
Mark <input type="radio"/>	Time _____	Date _____
Fold		
EVIDENCE		
EVIDENCE		
CAT. NO. E53		

Vacuuming

- Debris is collected on a filter or membrane



Release of Crime Scene

The following is completed by a team leader:

- Review of all aspects of search
- Discussion of findings
- Make sure all evidence is marked and accounted for
- Ensure all equipment has been gathered
- Time and date of release and who scene is released to



Step 7: Analyzing the Evidence & Reconstruction of scene

Following the CSI, the forensic lab work begins

- Crime scene analysis involves theory building from all scene and investigative information
- Investigative information includes:
 - Forensic laboratory analysis and comparisons of all relevant evidence submitted for analysis
 - Medical examiner's report on the cause and manner of death, which usually includes the results of toxicological analysis of biological samples from the autopsy



Step 7: Analyzing the Evidence & Reconstruction of scene

Following the CSI, the forensic lab work begins

Reconstruction:

The formulation of the “best theory” of the events in a case

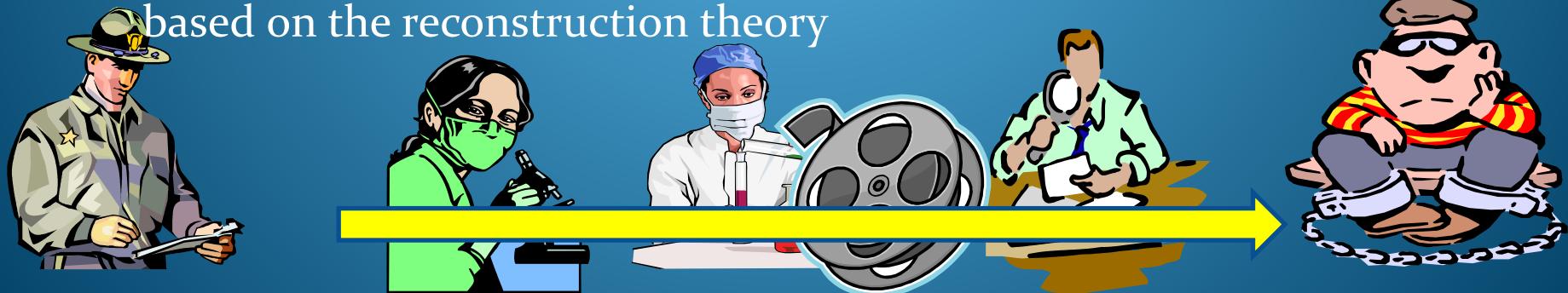
Based on all the available evidence, information, and supportive data

May require experiments to try and duplicate some of the events (e.g. blood spatter)

May be complete, partial, or limited

Reenactment:

A hypothetical rendition of a set of events at a crime scene partially based on the reconstruction theory



Crime Scene Safety

- ❑ Potential health hazards exist at crime scenes.
- ❑ Chemicals (e.g. methamphetamine production) are hazardous.
- ❑ AIDS and hepatitis B and C are two possible blood born diseases that can be transmitted.
- ❑ The OSHA has proposed guidelines to protect investigators at crime scenes (PPE).
- ❑ Universal Precautions- assume all body fluids are contagious.

