

3

Preserving the Crime Scene

CHAPTER OBJECTIVES

After completing this chapter, you will be able to:

- 1 Discuss the role of evidence in criminal investigation.
- 2 List the eight basic steps for gathering and preserving evidence at a crime scene.
- 3 Identify what investigators consider the location of a crime scene.
- 4 Explain the importance of photography in preserving a crime scene.
- 5 Tell how crime scene sketches complement still photography, and list the five methods used to prepare sketches.
- 6 Give the five search patterns from which investigators may choose when conducting a search.
- 7 Understand the importance of securing and preserving evidence found at a crime scene.



EVIDENCE AND THE CRIME SCENE

A criminal investigation must be concerned with both people and things. Together they constitute the field of physical evidence for an investigation and comprise the ingredients that, when combined, may produce a solution to a crime. Utilizing both human testimony and physical evidence, a prosecuting attorney will bring a case against a defendant. The prosecuting attorney can muster a strong case only if the investigators have done their job thoroughly. This means that they have effectively sought and collected *usable* evidence. **Evidence**, in criminal investigation, is any item that helps to establish the facts of a related criminal case. Evidence may be found at the scene of the crime or on the victim or be taken from the suspect or the suspect's environment. How that evidence is protected, collected, secured, and transported will affect its later usefulness when introduced in a criminal court case.

Forensic science has become a household word as the popularity of crime scene investigation television programs have blossomed. But what exactly is forensic science? Saferstein (2003) broadly defines forensic science as the application of science to law and includes the application of the knowledge of science and technology for determining the evidential value of the crime scene and related evidence.

Criminalists, or **forensic specialists**, are people specifically trained to collect evidence and to make scientific tests and assessments of various types of physical evidence. In some jurisdictions investigators can call on these trained technicians to aid in the search for evidence, and they are often referred to as crime scene investigators (CSI). During most preliminary investigations, however, the responding officer or investigator must take on the role of the forensic specialist. A review of the literature (Gardner, 2005; Giard, 2007; Vince, 2005) suggests that an investigator must consider eight basic procedures during the crime scene investigation to gather and preserve evidence:

1. Recognize or discover relevant physical evidence.
2. Examine evidence to determine that it can be tested or compared in a crime laboratory.
3. Collect evidence with care and diligence, according to standard procedures, and in a lawful manner.
4. Carefully handle, package, and label evidence to avoid damage, loss, contamination, or questionable links in the chain of custody.
5. Carefully record how, where, and by whom evidence was located to ensure that evidence has not been tampered with or altered.
6. Carefully transport evidence to a laboratory, maintaining the proper chain of custody and security.
7. Maintain the integrity of the chain of custody from the crime lab to the court after tests have been completed.
8. Present or explain evidence in a court proceeding, substantiate the find if necessary, and document the chain of custody.

To be effective in gathering evidence at a crime scene, an investigator must know what qualifies or is significant as physical evidence in a particular crime; how to properly collect, preserve, and transport the evidence; and what the crime lab can do with it. The crime laboratory is only as good as the investigator. If the investigator fails to locate adequate evidence, there is little a crime laboratory can do. Generally speaking, the investigator has three main sources for evidence: (1) the scene of the crime, (2) the victim, if any, and (3) the suspect and his or her environment (Gardner, 2005; Worrall, 2005).

evidence Any item that helps to establish the facts of a related criminal case. It may be found at the scene of the crime or on the victim or taken from the suspect or the suspect's environment.

forensic science The application of science to law, and the use of science and technology to determine the value of evidence.

criminalist (or forensic specialist) A person specifically trained to collect evidence and to make scientific tests and assessments of various types of physical evidence.

FYI

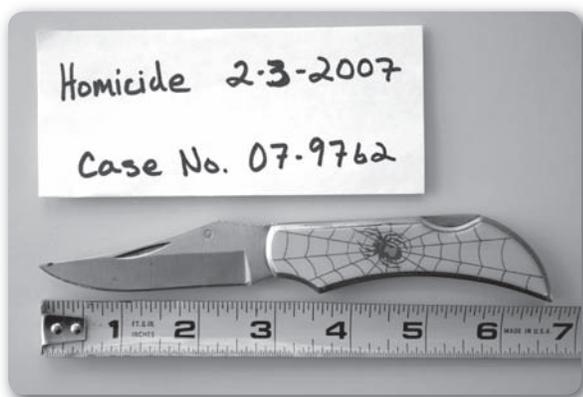
Tests on physical evidence discovered at the crime scene are usually conducted in a crime laboratory. Some tests, however, must be conducted in the field. For example, a special test can determine whether blood has been cleaned from a floor. When a chemical known as *luminol* is sprayed on the floor, even minute traces of blood will fluoresce, or light up, when viewed under ultraviolet light.

Among the decisions an investigator must make during the preliminary investigation is what constitutes the crime scene. The boundaries must be established so that the entire crime scene can be effectively preserved. The crime scene can be understood to include all areas in which the criminal, any possible victim, and any eyewitnesses moved during the time the crime was committed. Typically, one might expect this to include a fairly stable, limited area. In some crimes, however, the crime scene may actually comprise several different sites. For instance, say that a young girl was abducted from her bedroom one evening. She was then transported by car to a cabin in the woods and sexually assaulted. Following the assault, the abductor shot her to death and carried the body into the woods, where he buried it in a shallow grave. In this example, each location—the bedroom, the car, the cabin, and the area around the grave—is part of the crime scene. The boundaries of a given part of the crime scene, however, are well defined physically and must be preserved.

The ultimate success or failure of a criminal investigation depends on the thoroughness exercised at the crime scene in preserving, collecting, and recording all available information. Very often the position of an article in a room, in a lot, or in a building will convey to the trained eye the events preceding the crime. It is important, therefore, to repeat the rule that nothing at a crime scene should be touched, moved, or altered in any way until it has been identified, photographed, sketched, measured, and recorded. Among the first ways of recording a crime scene is by taking pictures.

PICTORIAL DOCUMENTATION OF THE CRIME SCENE

One of the investigator's most important jobs at the crime scene is to create an accurate, objective visual record before any item or objects are moved or removed as possible elements of evidence. Photographs of the scene of a serious criminal act should be taken as soon as possible after preliminary investigation priorities have been taken care of, before note taking, sketching, or the search of additional evidence begins (Robinson, 2006; Staggs, 1997).



A measuring device helps to depict the size of the object.

Photographing the Crime Scene

The role of photographs in a criminal investigation is to present a logical story visually. Nothing in the crime scene should be disturbed before photographs are taken. The pictures should illustrate the original, uncontaminated condition of the crime scene. The objective of photographing the crime scene is to visually preserve the scene as it was when found by the investigators, and presumably as left by the perpetrator; to record the location and position of items of evidence; and to document and record the points of view of principals and potential witnesses. In



The progression of photographs from different distances helps to reconstruct the crime that was committed.

addition, photographs document the spatial relationship of various items located in and about the crime scene (Ogle, 2004).

Crime scene photographs, properly executed, help to ensure a thorough investigation and subsequent prosecution. A series of poorly planned and poorly taken pictures may result in a weak, ineffectual prosecution. When photographing a crime scene, follow the axiom “More is better.” That is, if there is a question whether some object or aspect of the scene should be photographed, it should be. Later, if it becomes apparent that some seemingly innocuous part of the scene was indeed important, but not photographed, it may be too late to photographically preserve it (Ogle, 2004).

Camera Choices

Many departments have moved from 35 mm cameras to digital and even video recording devices (Gardner, 2005). Both black and white and colored film may be used at the crime scene, and high-speed films are especially useful for capturing pictures even in low-light conditions (Weston & Lushbaugh, 2006). Traditionally, however, a single lens reflex (SLR) camera has been selected to photograph crime scenes. The SLR camera typically is compact and comes in a variety of formats, from manually focusing units to fully automatic units complete with automatic focusing, flash, and winding (Ogle, 2004). Lenses are available in a wide assortment of long-range and close-up (macro) choices. Zoom lenses can be of particular value in crime scene photography. A zoom lens with the range of 35–70 mm with a macro capability, along with a long-range zoom lens in the range of 8–200 mm, is typically adequate for most types of pictures taken at a crime scene.

Digital cameras have a number of advantages when used in crime scene photography: they require no chemical processing, can be displayed on the camera immediately, and can be transferred to a computer and stored in an electronic database (Smith, 2003). Because digital photos are very easy to alter, however, until recently they had little value as evidence in court. Today digital crime scene photographs are becoming accepted in most courts across the nation. In fact, the prosecutors in the bombing trial of Timothy McVeigh used digital photographs when presenting their case. Nonetheless, the possible misuse of digital photographs is a reality, and proper procedures are necessary to protect the integrity of these images (Ogle, 2004). Careful logs and storage of these digital images in a database are critical for maintaining the authenticity of photos.

For crime scene investigation, the digital camera should have four or more megapixels, close-up capabilities, and a flash attachment. **Megapixels** refer to *image resolution*. A pixel is the smallest unit of brightness and color in an image. The more pixels you have, the sharper, clearer, and better picture you can produce. (Mega means one million, so four megapixels equals four million pixels.) The more pixels, the more detail that can be captured. This is important when photographing small items of evidence. Also, the difference in megapixels is important when making prints for court. Two megapixels gives a good 5 × 7-inch print. Three megapixels gives a good 8 × 10-inch print. Four megapixels gives a good 11 × 14-inch print. Five megapixels gives a good 16 × 20-inch print.

Video cameras also provide an easy and inexpensive way to document crime scenes, and they provide jurors with a more realistic sense of the crime scene than still pictures of an accident, room, or area. The zoom on video cameras is more often digital rather than optical, and the pictures have slightly less clarity than fixed photographs, and to some extent even digital images. Videos are, in general, a good briefing tool for police officers who have not visited the crime scene and can be an additional aid for the prosecutor in presenting a criminal case. They are not a substitute, however, for either photographs or sketches of the crime scene.

megapixels Refers to picture image resolution. A mega equals 1 million. Pixels are the smallest unit of brightness and color; more pixels means sharper, clearer, and better images.

Photo Organization

To adequately present the crime scene visually, the photographs must form an organized sequence and show all relevant locations and objects. One guideline for taking crime scene photographs is to progress from the general to the specific. This involves using three major types of vantage points: long-range, mid-range, and close-up. What constitutes a long-range, mid-range, or close-up photograph is somewhat relative. For instance, a long-range photograph of an apartment complex may be an aerial view of the entire area. A long-range photograph of a room may be a view from the doorway to the room. The actual vantage points will depend on the immediate area where the crime was committed and the kind of location involved.

A separate series of photographs should be taken for each distance. For instance, in a homicide investigation the photographer might snap the following: *long-range* photographs of the overall scene, to show the murder scene as a person would view it from a standing position in the doorway and from different corners of the room, including the victim and all the objects in the room; *mid-range* photographs from different angles about 8 or 10 feet from the victim, omitting some of the objects shown in the long-range views; *close-up* photographs, taken from about 5 feet or less from the victim, showing wounds on the victim's body, an arm, leg, or torso, or objects close to the victim's body such as a gun, empty cartridges, and blood patterns.

Sometimes it may be necessary to include a measurement scale in photographs of objects at a crime scene. This helps those viewing the photographs to understand the size and distance relationships depicted. Whenever practical, depending on the subject matter of the photograph, a measuring device should appear in the photograph along with the crime scene object. It is critical to note, however, that judges sometimes demand to see crime scene photographs without the clutter of extraneous scaling devices. Therefore, always remember to photograph subject matter at the crime scene as it is originally found. Then repeat the photograph with a scaling or identification marker.

The first photograph on every roll of film shot at the crime scene should be a title card (Figure 3.1) indicating the crime location, date, case identifier, photographer, and roll number. All subsequent photographs taken at the crime scene should be identified by number and entered in the photo log.

SKETCHING THE CRIME SCENE

Why, you might ask, should the crime scene be sketched if it has already been photographed or videotaped? Sketches are useful in questioning witnesses and suspects and when writing investigative reports. Sketches are also excellent companions to photographs. Where photographs provide exacting details, sketches offer accurate information about the placement of objects, and they show relationships and distances between things. Sketches can be used to refresh an investigator's memory; to reflect the relationship of objects to the surrounding area; to help the prosecutor, judge, and jury understanding the conditions at the crime scene; and to supplement photographs of the scene (Fisher, 2004). See Figure 3.2 for a completed sketch of a homicide scene. Note how the sketch preparer depicted the locations of the victim, the gun cartridge cases, and the footprints.

Geberth (2006) suggests that for a sketch or diagram to be legally admissible in court, it must meet the following requirements:

- It must be part of a qualified person's testimony.
- It must recall the situation that the preparer saw.
- It must express the place or scene correctly.

FIGURE 3.1 Photo Title Card and Photo Log

| PHOTOGRAPHIC LOG | | | | |
|---------------------------------------------------------------------|--|-----------------------------------------------------|--|--|
| LOCATION: <u>Master Bedroom</u> | | CAMERA: <u>#12</u> | | |
| DATE: <u>03-17-07</u> | | TYPE OF FILM AND RATING: <u>Kodak/400/24</u> | | |
| CASE IDENTIFIER: <u>B-2345</u> | | REMARKS: <u>Roll #1</u> | | |
| PREPARER/ASSISTANTS: <u>Sgt. Dwyer</u> <u>Off. Torres</u> | | | | |

| 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 | <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> LOCATION: Master Bedroom DATE: 03-17-07 CASE IDENTIFIER: B-2345 PHOTOGRAPHER: Off. Torres ROLL NUMBER: 1 of 1 </div> |
| 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 | |

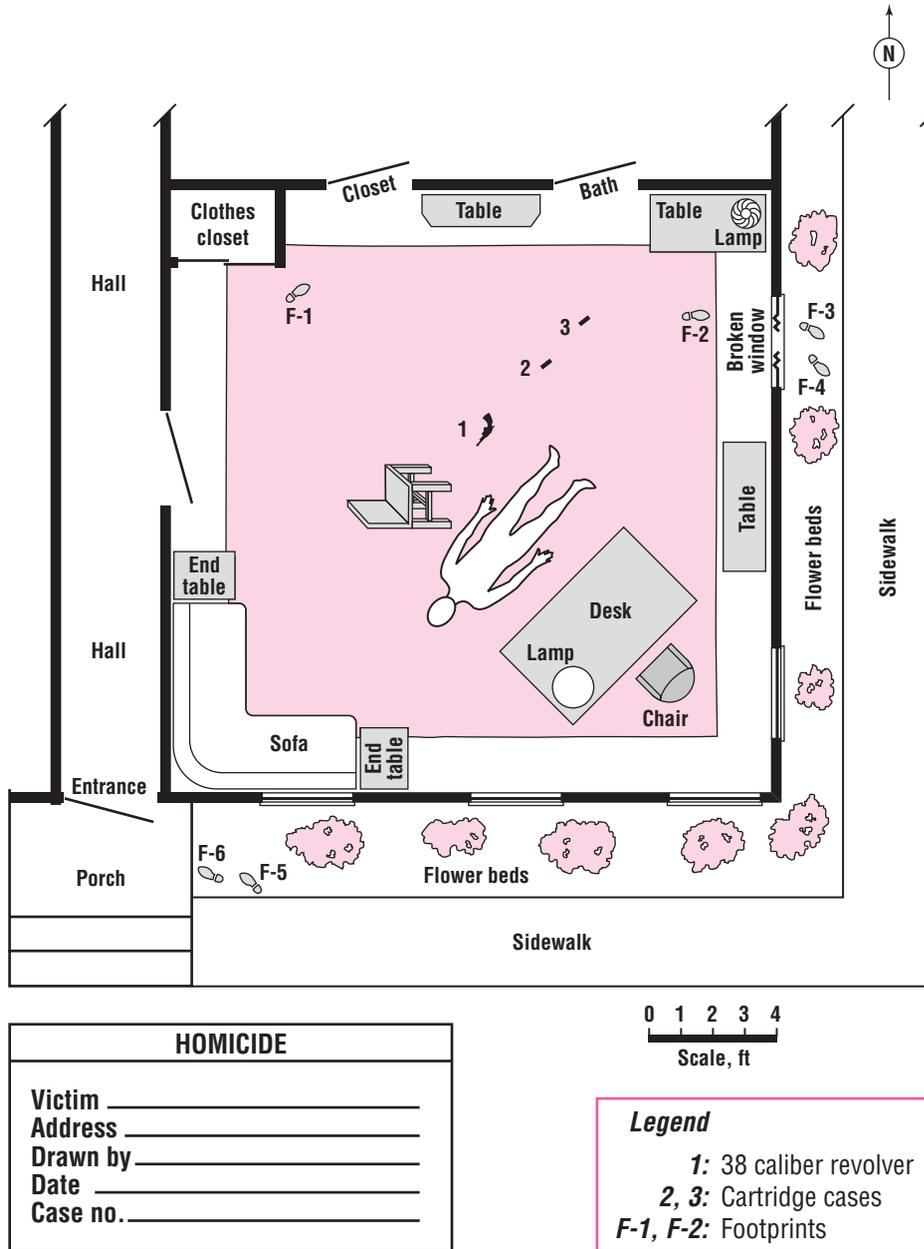
Preparing the Sketch

A crime scene sketch complements the notes and photographs taken during the crime scene investigation. The purpose of the sketch is to present accurate information, not necessarily to be artistic (Genge, 2002). A simple line drawing with accurate measurements is sufficient. Some outdoor measurements may be paced off, estimated, or obtained by using the odometer of a car. However, in a final sketch for a report, precise measurements and accurate reproduction of the crime scene are essential (Lee, Palmbach, & Miller, 2001).

Initially, the sketch preparer should take a general look around the scene and decide which details to include in the sketch. Next, the investigator must decide what scale to use. In general, try to use the largest scale possible. To determine what scale to use, divide the longest measurement at the scene by the longest measurement of the sketching paper to be used. Most reports and records are kept on 8 1/2 × 11-inch paper. Thus if the longest measurement at the scene is 100 feet, let 1 inch equal 10 feet so that the drawing will fit comfortably within the 11-inch length of the paper. Graph paper also makes it easier to draw objects while maintaining scale.

All sketches should include a compass or an orienting compass arrow indicating north; a legend or key to explain letters, numbers, or symbols used; and an indication of the scale used (Figure 3.2).

FIGURE 3.2 Crime Scene Sketch



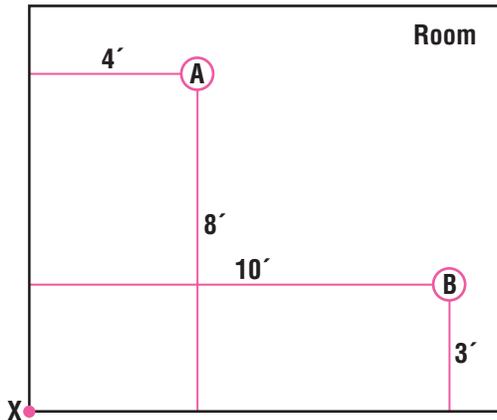
Sketching Methods

Several different methods can be used to prepare crime sketches. These methods all establish the location of evidence and other objects as observed at the crime scene. The typical crime scene sketch is presented as a bird's-eye view of the scene. Only horizontal surfaces are apparent, and only evidence located on these horizontal surfaces is included in the sketch (Gardner, 2005).

Rectangular Coordinates The **rectangular-coordinates method** requires two reference lines at right angles to each other. It is often used to locate objects in a room, as depicted in Figure 3.3. Two walls of the room serve as the lines. Distances

rectangular-coordinates method A sketching method that 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.

FIGURE 3.3
Rectangular Coordinates Method



triangulation method
A sketching method that requires measuring the distance of an object along a straight line from two widely separated, fixed reference points.

baseline method A sketching method that takes measurements along and from a single reference line, called a baseline, which can be established by using a length of string, a chalk line, or some convenient means.

are measured from the objects to the walls along lines perpendicular (at right angles) to the walls.

Triangulation The **triangulation method** requires measuring the distance of an object from two fixed reference points. This procedure may be used either inside or outside. In a room, the corners are convenient fixed points. The locations of objects strewn about the room are recorded simply by their distances from the two points. For example, in Figure 3.4, Object *A* is 4 feet (1.2 meters) from *Y* and 8 feet (2.4 meters) from *X*. When using this method outside, select two trees or two street corners, a mailbox and a fire hydrant, or any other two fixed points.

Baseline The **baseline method** requires measurements to be taken along and from a single reference line, called a baseline. The baseline should be established by using a length of string,

a chalk line, or some other convenient means. Often you can establish the line between two objects, such as a rock and a tree, or between two corners of a room, as shown in Figure 3.5. The measurements indicating the location of a given object are then taken from left to right along the baseline to a point at right angles to the object being plotted. The distance from the baseline to the object is then indicated on the sketch.

Compass Point The **compass point method** requires a protractor or some other method of measuring angles between two lines. One point, often the corner of a room, is selected as the point of origin. A line extending from the origin is used as an axis from which angles can be measured. For example, object *A* in Figure 3.6 is located at a point 10 feet (3 meters) from the origin (the corner point) and at an angle of 20 degrees from the vertical line through the corner point (the axis).

Cross Projection In the **cross projection method** the crime scene takes on the appearance of a box opened out. The ceiling opens up like the lid of a hinged box, with the four walls opening outward. In some law enforcement circles, this method is also called an *exploded sketch*. It is an effective way to portray evidence found on or in the walls or ceiling of a room (Figure 3.7).

FIGURE 3.4 Triangulation Method

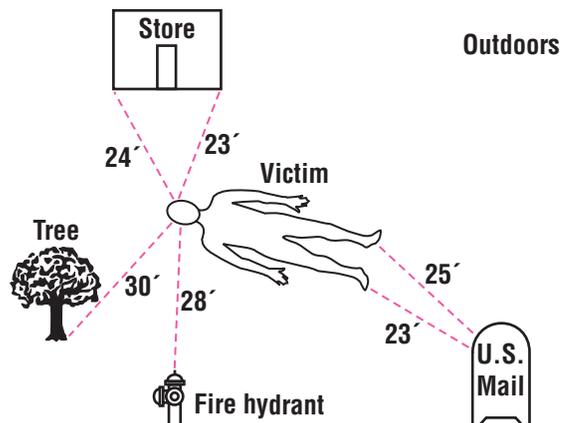
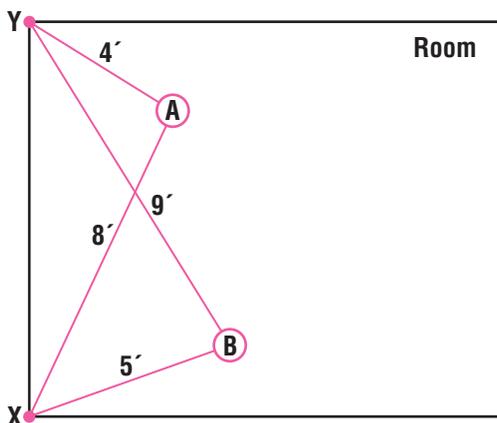
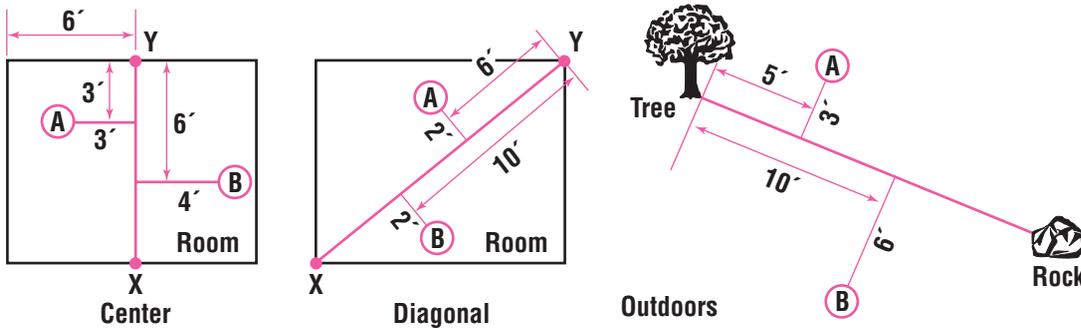


FIGURE 3.5 Baseline Method



Equipment for Sketches

As in other aspects of crime scene investigation, officers should do advance preparation to have the right equipment available to draw crime scene sketches. The following are some items an investigator should carry to create sketches at the scene:

- A supply of pencils (medium or hard lead)
- Graph paper and blank paper
- A clipboard or other solid portable drawing surface
- A metal tape measure of at least 50 feet
- A folding ruler, such as the standard 6-foot folding ruler used by carpenters, for short measurements
- A 12- or 15-inch ruler for drawing straight lines, drawing to scale, or making very short measurements
- A reliable compass or some other means of finding north
- A protractor for drawing and measuring angles

FIGURE 3.6 Compass Point Method

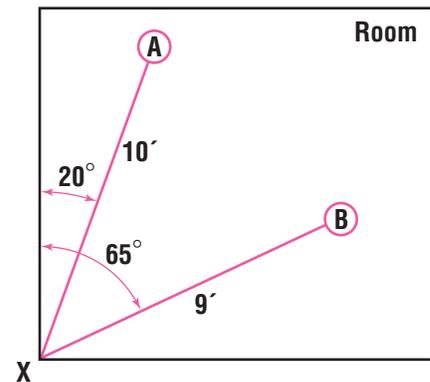
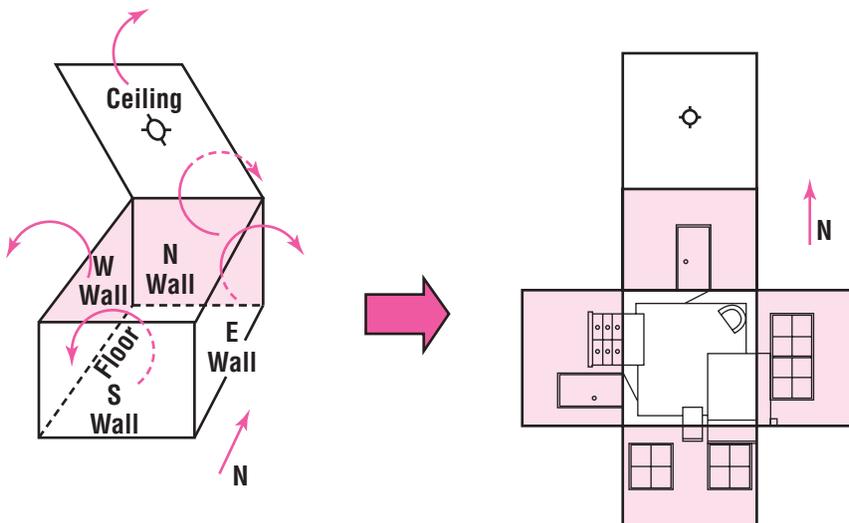


FIGURE 3.7 Cross Projection Method



compass point method

A sketching method that requires a protractor or some method of measuring angles between two lines. One point is selected as the origin, and a line extended from the origin becomes an axis from which angles can be measured.

cross projection method

A sketching method in which the ceiling appears to open up like the lid of a hinged box, with the four walls opening outward. Measurements are then indicated from a point on the floor to the wall.

DISCOVERING AND RECOGNIZING EVIDENCE

After the crime scene has been photographed and sketched, you can begin a search. When you search a crime scene, systematically look for physical evidence that may prove useful in establishing that a crime has been committed, determining what method of operation the perpetrator may have used, eliminating suspects, and identifying the perpetrator. Reasoning and experience will help you determine the value and relevance of the evidence you find.

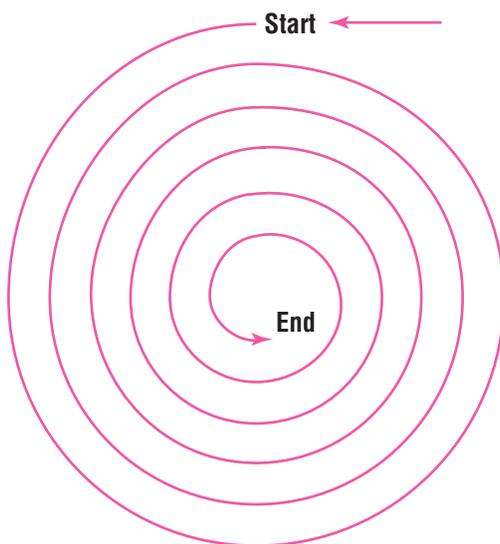
Equipment for Searches

In many departments, patrol officers take a prepared evidence-gathering kit to the crime scene. Particularly in smaller departments where much of the crime scene security and evidence gathering will be undertaken by patrol officers, patrol cars should be equipped with an assortment of items included on this list suggested by the Technical Working Group on Crime Scene Investigation (NIJ, 2004):

| | |
|---------------------|-----------------------|
| Latex gloves | Compass |
| Camera, film | String |
| Rope | Knife |
| Evidence tags | Steel tape measure |
| Assorted containers | Ruler |
| Assorted envelopes | Pens |
| Pill boxes | Indelible marker |
| Magnifier | Paper |
| Test tubes | Fingerprint kit |
| Plastic bags | Shovel |
| Bottles | Flashlight, batteries |
| Cellophane tape | Probing rod |
| Ax | Wire |
| Saw | First-aid kit |
| Wrecking bar | Metal detector |
| Chalk, chalk line | |

spiral search pattern A search pattern typically used in outdoor areas and normally launched by a single person. He or she begins at the outermost corner and walks in a decreasing spiral toward a central point.

FIGURE 3.8 Spiral Search Pattern



In larger departments the crime scene investigation team (usually composed of civilian technicians) likely will be called out, and they will arrive with the necessary equipment to collect, label, and secure evidence found at the crime scene.

Search Patterns

Depending on the location or the type of crime, the investigator may choose one of the following five basic patterns for searching a crime scene: spiral, strip, grid, zone, or pie patterns.

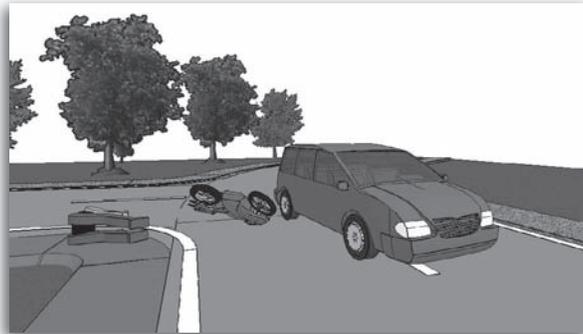
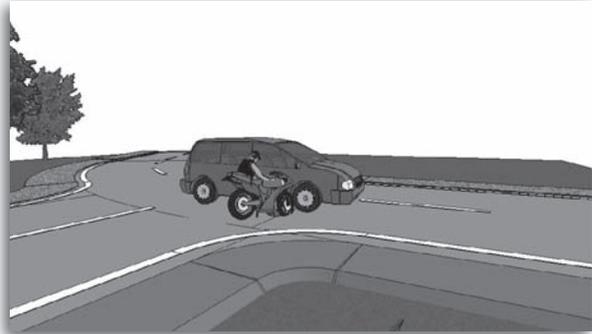
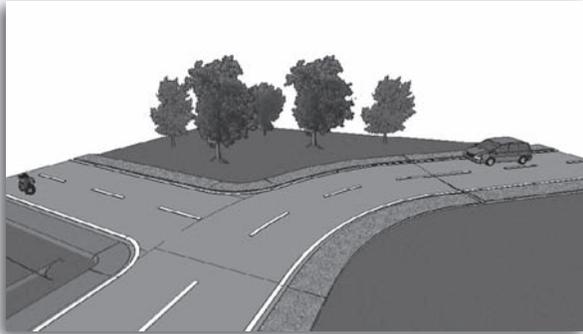
Spiral The **spiral search pattern** is typically used in an outdoor crime scene and is launched by a single investigator. He or she begins at the outermost corner and walks in a decreasing spiral toward a central point (Figure 3.8). Following the spiral from the outermost edge to the center provides a detailed search. This pattern should not be undertaken in reverse. That is, you should never begin at a central point and

FOCUS ON TECHNOLOGY

COMPUTER-AIDED CRIME SCENE SKETCHING

SOPHISTICATED SOFTWARE makes it possible for investigators to generate professional crime scene drawings as well as reconstructions of motor vehicle accidents. In some cases this involves the use of a computer-aided drafting and design program (CADD). By using CADD, technicians can create

extremely accurate sketches that can easily be projected on large screens for courtroom presentations. Some CADD programs come complete with symbol libraries, enabling the technician to select and place various items in the sketch that were observed at the crime scene.



spiral outward; in entering the central area to begin, you are likely to trample or destroy evidence.

Strip The **strip search pattern**, like the spiral, is typically used outdoors, but it may be used in large open indoor areas, such as a warehouse or factory, or even in smaller areas, such as a room. Strip searches may be undertaken by a single officer or several officers. This search pattern involves imagining a series of lanes dividing up the entire space to be searched, as depicted in Figure 3.9. The searchers move up and down each lane, continuing until the area has been completely searched. When more than one person is searching and one person finds evidence, all the other searchers should freeze until the evidence has been properly collected. Then they can resume the search from the points where they stopped.

Grid The **grid search pattern** begins like a strip search. However, after completing the search by horizontal lanes, the searchers double back at right angles to the original strip search, as shown in Figure 3.10. In effect, the searchers are conducting another strip search, perpendicular to the first. The grid search pattern is both more time-consuming and more thorough. Often, simply looking at the same area from two different angles yields evidence that would be missed in a simple strip search.

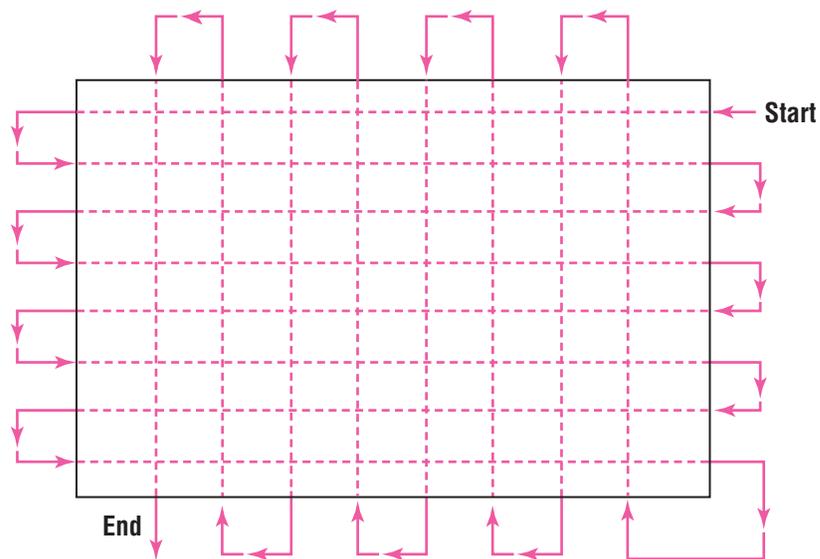
strip search pattern A search pattern in which the space to be searched is divided into a series of lanes. One or more searchers proceed up and down the lane, continuing until the area has been completely searched.

grid search pattern A search pattern that consists of two strip searches, the second perpendicular to the first. It allows the area to be viewed from two angles.

FIGURE 3.9 Strip Search Pattern



FIGURE 3.10 Grid Search Pattern



zone search pattern A search pattern in which the area is divided into four quadrants, each of which is then examined with one of the other patterns.

pie (or wheel) search pattern A search pattern in which the area is divided into pie-shaped sections, usually six in number. Each section is then searched, usually by a variation of the strip search.

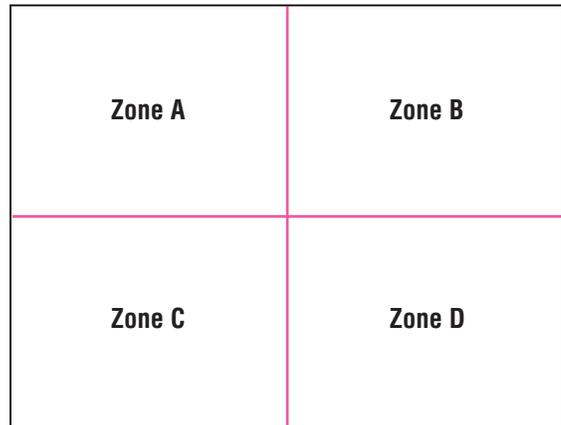
Zone In a **zone search pattern** the investigator creates two imaginary axes, which divide the area into four quadrants (Figure 3.11). Each quadrant can then be examined with one of the previously described patterns. When the area is particularly large, a zone search pattern is sometimes used to create four smaller and more manageable search areas.

Pie or Wheel The **pie search pattern**, like the zone pattern, involves dividing the search area into smaller sections. In the pie pattern, the sections are pie slices, or sections of a wheel, usually six in number, as depicted in Figure 3.12. Each slice of the pie is then searched with a variation of the strip search.

The strip and grid search patterns are most commonly used by investigators. When search areas are very open or large, the spiral, zone, or pie patterns prove productive. The preferred method of searching varies with the crime, the type of evidence sought, and the purpose of the search. Guards should be posted at doors, gates, and other entryways while a search is being conducted.

When searching your assigned section, be alert for areas that appear to have been recently disturbed. Watch for indications of tampering, such as loose moldings, detached light fixtures, uncovered air ducts, splintered floorboards, new nails or screws, and patches in plaster or cement. Also be alert to new paint, fresh stains, soil disturbances, new grass or sod, broken twigs, freshly turned soil, and recent scratch marks on window frames or walls. Unusual arrangements, dust disturbances, outlines from missing wall hangings, and tool marks should all be examined. Also look for special hiding places, such as hidden compartments, false bottoms, hollowed-out objects, and stuffed toys. Obvious places, such as furniture, beds, vacuum cleaners, ice trays, food boxes, and other containers, should not be overlooked.

FIGURE 3.11 Zone Search Pattern



COLLECTING AND MARKING EVIDENCE

We have already discussed the importance of legal search and seizure when identifying and collecting evidence. We also know that the evidence presented in court must be material, relevant, and competent. In addition, the court will want answers to the following questions about evidence collected at the crime scene:

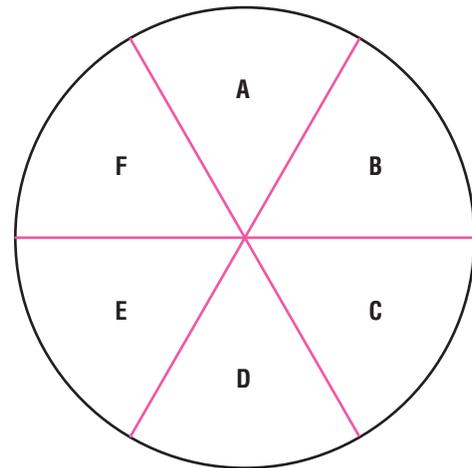
- Who found it?
- What did it look like?
- When was it found?
- Where was it found, and what is its relation to other objects at the scene?
- Where was it held from its collection to its presentation in court?

To answer these questions, complete logs and notes of all evidence found during a search must be maintained.

Investigators should handle all evidence carefully and should wear latex gloves to ensure that they leave no accidental fingerprints and to protect themselves from toxic materials and infectious disease. Small items of evidence generally can be lifted and placed directly into a test tube, small bottle, or plastic bag. Large items can be placed in boxes or bags. A fairly common evidence container in use today is a 9 × 12-inch manila envelope.

The investigator who finds the evidence should place his or her personal identifying mark on it. The mark should be permanent and capable of positive identification. In addition, this mark should not be placed on any area that might need to be examined in the lab. A knife can be used to mark hard objects; a pen can be used on absorbent materials. Evidence that cannot be physically marked, such as bird shot or liquids, should be placed in an appropriate container. This receptacle should then be sealed and identified with a label or property tag indicating the title of the case, the officer's name or initials, the date, the time, the specific location where it was found, and the case number, if available. It is preferable to have another investigator present at the time the evidence is found, and the name of this investigator also should be recorded on the evidence log.

FIGURE 3.12 Pie, or Wheel, Search Pattern



HISTORY

ONE OF THE FIRST CRIME LABORATORIES WAS SET UP IN 1910 IN LYONS, FRANCE, by a doctor named Edmond Locard. Locard helped develop scientific methods for investigating crimes. The first crime laboratory in the United States was established in Los Angeles in 1923. Today the United States has almost 300 crime laboratories. Some crime laboratories examine only one type of evidence. The FBI crime laboratory, organized in 1932, is one of the best known in the world.

standard of comparison

A model, measure, or object with which evidence is compared to determine whether both came from the same source.

Some kinds of evidence are more valuable than others. For example, evidence in its original, unaltered state is more valuable than evidence that has been damaged. Also, some types of evidence, such as fingerprints, require a standard of comparison. A **standard of comparison** is a model, measure, or object with which evidence is compared to determine whether both came from the same source. A fingerprint found at a crime scene must be matched with a known print to be of value. A shard of glass found on a suspect's clothing could be compared with glass collected from a broken window at a burglary to provide evidence of the suspect's participation in the crime. Specimens of blood, hair, fibers, soil, bullets, paper, cloth, paint, and so forth must be collected in sufficient quantity to make comparison possible.

As mentioned at the beginning of the chapter, how evidence is protected, collected, secured, and transported affects its value. As an investigator, it is your job to ensure that evidence does not lose its value through improper collection, handling, packaging, or identification.

SUMMARY

Learning Objective 1

Evidence in a criminal investigation is any item that helps to establish the facts of a related criminal case. How evidence is protected, collected, secured, and transported affects its later usefulness when introduced in a criminal court case.

Learning Objective 2

Basic steps in gathering and preserving evidence during a criminal investigation include recognizing and examining relevant physical evidence; carefully collecting, handling, and recording evidence and transporting it to a crime lab; maintaining the security of evidence from the lab to the courtroom; and presenting or explaining evidence in court.

Learning Objective 3

The crime scene includes all areas in which the criminal, any victim, and any eyewitnesses moved during the time the crime was committed. It generally encompasses a limited area, but in some instances it may include several sites.

Learning Objective 4

Photography in criminal investigation involves the pictorial documentation of the crime scene and objects at the crime scene before anything is touched. Crime scene photographs are generally

taken from long-range, mid-range, and close-up vantage points. In some police agencies, videotaping is used as an adjunct to still photography.

Learning Objective 5

Crime scene sketches are companions to still photographs because they provide accurate information about the placement of objects at the scene and show the actual relationships and distances between things. When preparing sketches, investigators may use one of the following methods: rectangular coordinates, triangulation, baseline, compass point, and cross projection.

Learning Objective 6

Investigators may search for evidence at a crime scene by using the spiral, strip, grid, zone, or pie (or wheel) search pattern. The strip and grid search patterns are most commonly used by investigators.

Learning Objective 7

A complete accounting of evidence found at a crime scene should include who found or collected it, where and how it was transferred for safekeeping, and how it has been protected and stored since its collection.

KEY TERMS

| | | |
|---------------------------------------|----------------------------|----------------------------------|
| evidence 35 | triangulation method 42 | grid search pattern 45 |
| forensic science 35 | baseline method 42 | zone search pattern 46 |
| criminalist or forensic specialist 35 | compass point method 43 | pie, or wheel, search pattern 46 |
| megapixels 38 | cross projection method 43 | standard of comparison 48 |
| rectangular-coordinates method 41 | spiral search pattern 44 | |
| | strip search pattern 45 | |

QUESTIONS FOR REVIEW

Learning Objective 1

1. Define *evidence* and *criminalist*.
2. Name three main sources of evidence.
3. What affects the usefulness of evidence when it is introduced in court?

Learning Objective 2

4. Which of the eight basic steps in gathering and preserving evidence in a criminal investigation is the most important from a forensic specialist's point of view?

Learning Objective 3

5. If a rape was committed in the park, but the victim's unconscious body was found two blocks away behind a grocery store, which is the crime scene?

Learning Objective 4

6. Why should a crime scene be photographed before anything in it is touched or moved?
7. List the three distances from which crime scene photographs should be taken.

Learning Objective 5

8. What purpose does a sketch serve in a criminal investigation?
9. Why must the elements of a crime scene sketch be drawn to scale?
10. Which sketching method is useful for showing items in the walls? For measuring the distance of an object from two fixed lines? For measuring along a straight line from two widely separated reference points?

Learning Objective 6

11. In which search pattern do searchers complete one pattern and then double back at right angles across the area being examined? In which pattern does a searcher move in decreasing concentric circles?
12. Why must you never begin a spiral search pattern from the innermost point and move outward?

Learning Objective 7

13. Define *standard of comparison*.
14. Why is a chain of custody for evidence important to a criminal investigation?

CRITICAL THINKING EXERCISE

Divide into five groups, one for each of the five sketching methods described in the chapter. Individually prepare a sketch of your classroom, or another room or area that your instructor may designate, using the sketching method assigned to your group. The members of the group may discuss the sketching method and may help one another as appropriate. When your sketch is complete, compare it with the other sketches and analyze how you might improve your sketch.

INVESTIGATIVE SKILL BUILDERS

Allocating Resources

You have been assigned to lead a team investigating a homicide in a twelve-unit apartment building. When you arrive, the uniformed officer tells you that, besides the murder victim, there are no other injured victims.

1. What tasks do you need to perform, and in what sequence?
2. What area(s) will you secure as the crime scene?
3. What do you think are the priorities?
4. Estimate how many officers you will need to secure the crime scene and conduct the preliminary investigation.

Integrity/Honesty

You are the first to arrive on the scene of a violent crime. When the sergeant arrives, he asks you to take photos, and another officer, one more senior than yourself, is assigned to assist you, by writing up the photo log as you take the pictures. While you are calling out the type of shot (mid-range head, and so forth), you notice that the assisting officer is smoking a cigarette, and drops the butt on the ground. You also notice that she is lighting up another cigarette.

1. Do you ask the officer to pick up the butt she dropped?
2. Do you ask the officer not to smoke in the crime scene?
3. Do you report the officer's actions to your sergeant?