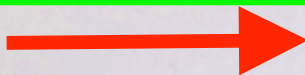


Grades 9-12 NTI Day #8 Forensics

Assignment: Please read the excerpt below as an independent reading assignment. Then read and answer the questions below the excerpt.

Start Reading Here



Photography The most important prerequisite for photographing a crime scene is for it to be unaltered. Unless injured people are involved, objects must not be moved until they have been photographed from all necessary angles. If objects are removed, positions changed, or items added, the photographs may not be admissible as evidence at a trial, and their intended value will be lost. If evidence has been moved or removed before photography, the fact should be noted in the report, but the evidence should not be reintroduced into the scene in order to take photographs.

Forensic photography documents and preserves the original crime scene intact for future investigation and shows the layout of the scene, the position and dimensions of evidence to be collected, and the physical relationship of objects at the scene to one another. Photographs taken from many angles can show possible lines of sight of victims, suspects, and witnesses. Photography is also important

for documenting biological evidence in its original condition because this kind of evidence is often altered during testing.

In order to be admissible as evidence within the justice system, photographs must meet the following criteria: (1) they must represent the crime scene as found, without manipulation or bias; (2) any re-creations of scenes or manipulation must be documented; (3) they must have bearing on the case in question; and (4) they must not engage in emotional manipulation of the jury.

Photographs cannot stand alone, however, they are complementary to notes and sketches and are an important part of the forensic documentation process. This process involves the collection, the organization, and the investigation of visual information through digital photography, digital videography, note taking, manual sketching, **computer-aided drafting (CAD)**, and three-dimensional imaging systems.

Crime-scene photographs have great value in their ability to show the layout of the scene, the position of evidence to be collected, and the relation of objects at the scene to one another. Photographs taken from many angles can show possible lines of sight of victims, suspects, or witnesses. An accurate description of the scene must be available to investigators for future analysis.

Currently digital photography is the preferred approach to crime-scene photography. A digital photograph is made when a light-sensitive microchip inside a digital camera is exposed to light coming from an object or scene. A digital camera captures light on each of millions of tiny picture elements called "pixels." The light is recorded on each pixel as a specific electric charge using a charged coupled device (CCD) or complementary metal oxide semiconductor (CMOS). The camera reads this charge number as image information, and then stores the image as a file on a memory card.

The number of pixels used to capture light is directly related to the resolution of the picture. Resolution is defined as the minimum distance that must separate two objects in order for them to be viewed as distinct objects. The lower the distance needed, the greater the resolution of the photograph.

Photographs of increasingly higher resolution show more and more detail and sharpness. The greater the number of pixels featured on the digital camera, the better the resolution will be. Because the number of pixels on a digital camera is in the millions, it is usually referred to in terms of megapixels. A camera that has four million pixels is a four-megapixel camera. A standard four-megapixel camera can create a clear image on a photographic print of up to 8 by 10 inches. As the number of megapixels increases, the clarity increases, allowing photographers to create bigger prints. Crime-scene photographers usually use cameras that feature as many as twelve megapixels or more. The Scientific Working Group on Image Technology (SWGIT) recommends using a single-lens reflex (SLR) camera with at least eight-megapixel resolution. Digital photography of crime scenes has many advantages. Digital imaging technologies can increase the pace of investigation, aid in the provision of evidence, as well as the identification of suspects. Investigators can observe the images immediately after taking them to ensure that important photographs are clear and show the best possible detail. As technology advances, digital photography provides other advantages over traditional film. For example, photographers can electronically stitch together individual images of a crime scene that were captured with a digital camera to create a nearly three

Computer-aided drafting (CAD)

is the use of computers (or workstations) to aid in the creation, modification, analysis, or optimization of a drawing.

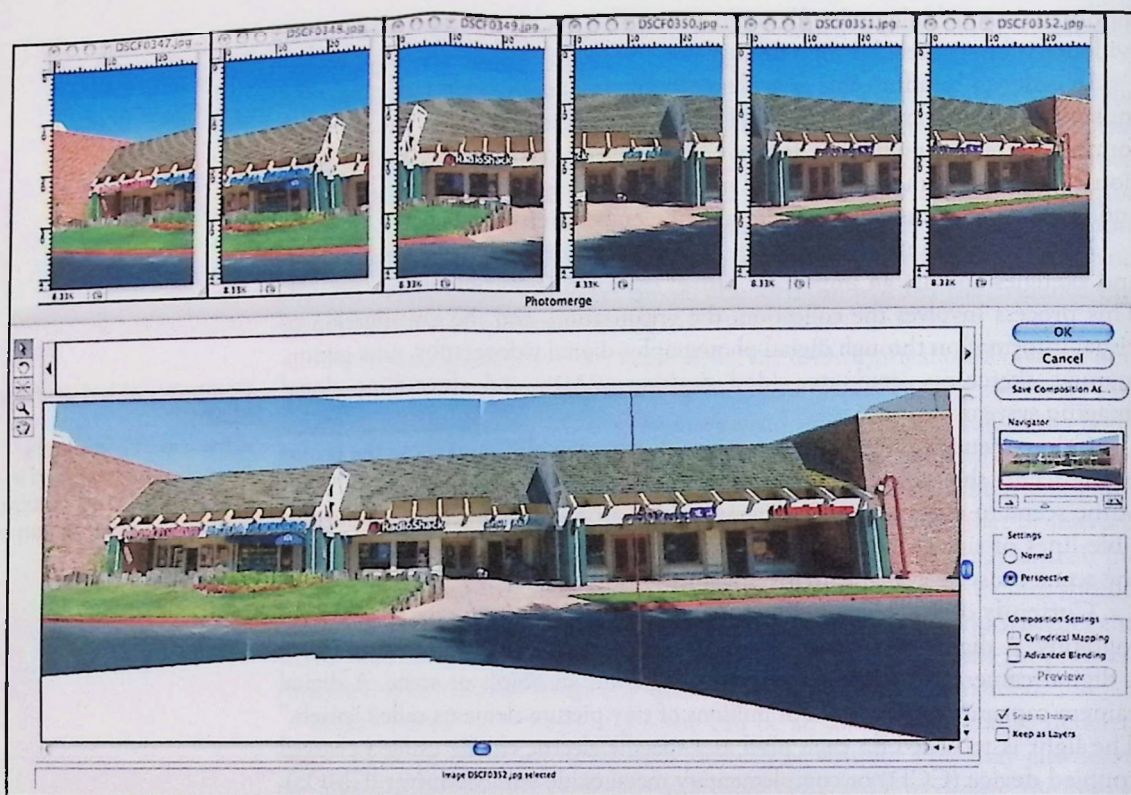


FIGURE 2-3 Individual images (top) are shown before being electronically stitched together into a single panoramic image (bottom). Individual photographs should be taken with about a 30 percent overlap. *Courtesy Imaging Forensics, Fountain Valley, Calif., www.imagingforensics.com*

dimensional panoramic view of the crime scene (see Figure 2–3). With the aid of a computer, any area of the scene captured digitally can be enhanced and examined in fine detail.

However, the effectiveness and utility of such technologies depend on the quality of image and the reliability of the process. The very nature of digital images opens digital photography up to important criticisms within forensic science casework. Because the photographs are digital, they can be easily manipulated by using computer software. This manipulation goes beyond traditional photograph enhancement such as adjusting brightness and contrast or color balancing. Computer software allows a person to crop a photo, remove repeating patterns such as window screens, superimpose images, and alter photos significantly in many other ways. Because the primary function of crime-scene photography is to provide an accurate depiction, this is a major concern, and care must be taken to maintain an original version of the image without modification. The nature of digital images, however, opens digital photography to important criticisms within forensic science casework. Because the photographs are digital, they can be easily manipulated by using computer software. This manipulation goes beyond traditional photograph enhancement such as adjusting brightness and contrast or color balancing. Because the main function of crime-scene photography is to provide an accurate depiction, this is a

major concern. To ensure that their digital images are admissible, many jurisdictions set guidelines for determining the circumstances under which digital photography may be used and establish and enforce strict protocols for image security and chain of custody.

Photographic Procedures. Each crime scene should be photographed as completely as possible. This means that the crime scene should include the area in which the crime took place and all adjacent areas where important acts occurred immediately before or after the commission of the crime.

Overview Photographs The first pictures the photographer takes are overview photographs of the entire scene and surrounding area, including points of exit and entry. These photographs provide information about the general area where the crime took place, the specific scene of the crime, about the relation of items of evidence to each other and to fixed features of the crime scene, and about the actual items of evidence. Overview photos are generally shot from a natural perspective (although aerial shots are also possible).

Overview photos begin from a distance and gradually zone in on the specific crime scene. At times, crime-scene photographs may find it difficult or impossible to take external overview photos at an active crime scene. Overview photos should be taken from the outside borders of the scene from various angles. If the crime took place indoors, the entire room should be photographed to show each wall area. Rooms adjacent to the actual crime site must be similarly photographed. If the crime scene includes a body, photographs must show the body's position and location relative to the entire scene. When taking overview photographs, the crime-scene photographer should include at least one object in multiple overview photographs to help visually piece the scene together. This object is called a "visual tag." Although one generally should avoid having individuals present in photographs, it may be helpful to photograph witnesses in the locations from which they viewed the crime. This can help the jury determine what a witness could or could not have seen from these locations. One may also wish to photograph the sight lines of suspects and victims. If a camera boom is available, the photographer should take pictures from overhead.

Medium-Range Photographs The next set of pictures should be medium range photographs that show the layout of smaller significant areas of the crime scene. Medium-range shots should be taken with evidence markers in place to show the spatial relationships between and among pieces of evidence in greater detail than in the overview photographs. A key medium-range photograph standard to all crime scenes is one that includes the "center" of the scene. In violent crimes, this usually includes the site where the victim was found and the surrounding area.

Close-Up Photographs Close-up photographs, taken last, show the greatest detail of individual objects or evidence. Macro lenses should be used when taking close-ups in order to fill the frame. A supplemental lens called an "extension tube" as well as close-up filter sets for magnification may also be used. At a minimum, there are four photographs required at a crime scene: an

overview photograph, a medium-range photograph, a close-up photograph, and a close-up photograph with a scale. These photographs create an adequate visual record of the position and appearance of an item of evidence at a crime scene.

STOP Reading here.
Skip to Questions.

Multiple-Choice Questions

1. **What is the most important prerequisite for photographing a crime scene?**
 - a) Ensuring the scene is altered for better angles
 - b) Making sure the scene is unaltered before photography
 - c) Collecting evidence before taking photos
 - d) Asking witnesses to direct the photography
 2. **What type of photograph provides an overall view of the crime scene and surrounding areas?**
 - a) Close-up photograph
 - b) Medium-range photograph
 - c) Overview photograph
 - d) Panoramic photograph
 3. **Why are close-up photographs important in a crime scene investigation?**
 - a) They provide a wide view of the scene
 - b) They show the greatest detail of individual objects or evidence
 - c) They capture the entire room in one shot
 - d) They replace the need for sketches
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Short-Answer Question

Explain why photographing a crime scene from multiple angles and perspectives (overview, medium-range, and close-up) is essential for a thorough investigation. How do these different types of photographs complement each other?
