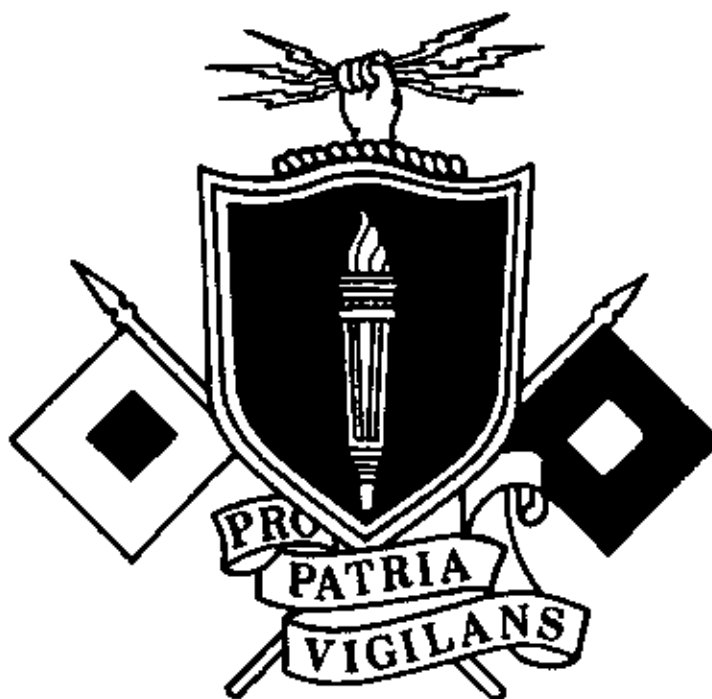


REALISTIC DRAWING



THE ARMY INSTITUTE FOR PROFESSIONAL DEVELOPMENT  
ARMY CORRESPONDENCE COURSE PROGRAM

A  
I  
P  
D

READINESS /  
PROFESSIONALISM



THRU  
GROWTH

US ARMY GRAPHICS DOCUMENTATION SPECIALIST  
MOS 25Q SKILL LEVEL 1

**REALISTIC DRAWING**

SUBCOURSE NO, SS 0531-A  
(Development Date: 31 December 1991)

US ARMY SIGNAL CENTER AND FORT GORDON  
Fort Gordon, Georgia

2 Credit Hours

**GENERAL**

This subcourse describes the tools and drawing surfaces used in realistic drawing. It identifies and defines the principles of realistic drawing, and the media and techniques used to render subjects accurately. This subcourse is divided into three lessons: describing tools and drawing surfaces, principles of realistic drawing, and media and techniques; with each lesson corresponding to an objective as indicated in the following pages.

Whenever pronouns or other references denoting gender appear in this document, they are written to refer to either male or female unless otherwise indicated.

### Lesson 1: DESCRIBE TOOLS AND DRAWING SURFACES

**TASK:** Identify various tools used to make a realistic image, how they are used, and the composition and measurement designators of drawing surfaces.

**CONDITIONS:** Given information and terms pertaining to different tools and drawing surfaces.

**STANDARDS:** Demonstrate competency of the task skills and knowledges by correctly responding to 70 percent or more of the multiple-choice test covering tools and drawing surfaces.

(This objective supports SM Task 113-579-1025 Use Drafting Tools and Techniques.)

### Lesson 2: PRINCIPLES OF REALISTIC DRAWING

**TASK:** Identify and define the principles of realistic drawing and their interrelationships.

**CONDITIONS:** Given information and examples of the principles of drawing, symbols, and the systematic approach.

**STANDARDS:** Demonstrate competency of the task skills and knowledges by correctly responding to 75 percent or more of the multiple-choice test covering principles of drawing.

(This objective is supported by SM Task 113-579-5056 Draw the Human Form.)

### Lesson 3: MEDIA AND TECHNIQUES

**TASK:** Describe various media and their parts, and techniques for using those media.

**CONDITIONS:** Given information and examples on various media and techniques.

**STANDARDS:** Demonstrate competency of the task skills and knowledges by correctly responding to 75 percent or more of the multiple-choice test covering media and techniques.

(This objective is supported by SM Task 113-579-1026 Draw Subjects in Perspective.)

## TABLE OF CONTENTS

Section	Page
Title Page.....	i
Table of Contents.....	iii
Introduction.....	vi
Lesson 1: DESCRIBE TOOLS AND DRAWING SURFACES.....	1
Learning Event 1. Identify and Describe the Tools Used to Apply, Remove, or Affix the Image to the Drawing Surface.....	1
Learning Event 2. Identify and Describe Various Drawing Surfaces, their Composition, and Measurement Designators.....	11
Practice Exercise.....	14
Lesson 2: PRINCIPLES OF REALISTIC DRAWING.....	17
Learning Event 1. Define Realistic Drawing.....	17
Learning Event 2. Define Form.....	21
Learning Event 3. Define Proportion.....	30
Learning Event 4. Define Contour.....	37
Learning Event 5. Define Shading.....	42
Learning Event 6. Exercise Visual Value Scale.....	45
Practice Exercise.....	46
Lesson 3. MEDIA AND TECHNIQUES.....	49
Learning Event 1. Define Media.....	49
Learning Event 2. Define Techniques.....	54
Practice Exercise.....	67

Answers to Practice Exercises.....	70
Appendix I.....	A-1

**\*\*\* IMPORTANT NOTICE \*\*\***

**THE PASSING SCORE FOR ALL ACCP MATERIAL IS NOW 70%.**  
**PLEASE DISREGARD ALL REFERENCES TO THE 75% REQUIREMENT.**

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## INTRODUCTION

Many people have seen countless artworks of all types, but few understand the background required to produce high quality realistic art and illustrations. This subcourse describes the tools and drawing surfaces necessary for realistic drawing. The course also defines the principles of realistic drawing, and describes the media and techniques used to render subjects accurately. Use of these knowledges through practice can help develop the skills for realistic drawing.

Many people view the works of a particular artist/illustrator and claim art is an inherited talent. Granted, some basic artistic inclinations may be inherent. However, skill refinement is acquired primarily through on-going desire and practice. Years of reading, studying, and practicing are the efforts the layman does not see in artwork. These are the items all craftsmen and professionals go through to become recognized in their endeavors. When looking at artwork, the viewer should realize the effort that went into the development of the craft.

Performance-Oriented (Multiple-Choice) Terminal Learning Objective:

**TASK:** Describe tools and drawing surfaces, identify and define principles of realistic drawing, and describe various media and techniques for their use.

**CONDITIONS:** Given information terms, and examples pertaining to different tools and drawing surfaces, the principles of realistic drawing, and various media and techniques.

**STANDARDS:** Demonstrate competency of the task skills and knowledges by correctly responding to 75 percent or more of the multiple-choice test covering tools and drawing surfaces, principles of drawing and media and techniques.

LESSON 1  
DESCRIBE TOOLS AND DRAWING SURFACES

TASK

Identify various tools used to make a realistic image, know how to use them, and the composition and measurement designators of drawing surfaces.

CONDITIONS

Given information and terms pertaining to different tools and drawing surfaces.

STANDARDS

Demonstrate competency of the task skills and knowledges by correctly responding to 70 percent or more of the multiple-choice test covering tools and drawing surfaces.

REFERENCES

NAVEDTRA 10472, CHAPTERS 1 and 4  
STP 11-25Q13-SM-TG, TASK 113-579-1025

Learning Event 1:

IDENTIFY AND DESCRIBE THE TOOLS USED TO APPLY, REMOVE, OR AFFIX  
THE IMAGE TO THE DRAWING SURFACE

1. Tools are used to apply, remove, or affix the medium to the drawing surface. A tool can join the medium like graphite in a pencil. Read the descriptions of some of the tools below.

a. Pencils, the most commonly used, least expensive drawing tools, are actually the casing surrounding a medium. Charcoal, carbon, and graphite are the most common types of pencils used in realistic drawing.

(1) Charcoal comes in five grades and can be in stick or pencil form. It produces a dull, dense black line. These pencils come in six grades from 10B (very soft) to HH (medium hard).

(2) Graphite (mistakenly referred to as lead) pencils are graded by hardness (fig 1-1). Lead is a soft, very shiny metal. Lead pencils are rare today, and have been replaced by graphite.



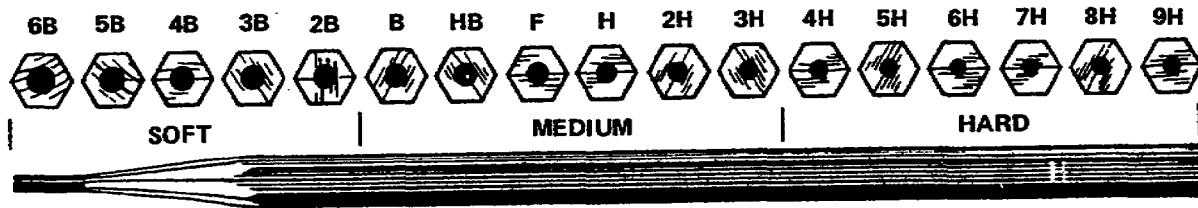


Figure 1-1. Graphite pencil sizes and grades

(a) Hardness grades are printed on the pencils, e.g., a very soft graphite pencil is the 6B which produces the darkest, boldest line. The hardest is the 9H which produces a lighter line. Be careful when trying to make lighter tones with a soft pencil. You may create an unwanted grainy effect. However, you can take advantage of a textured effect if you need it (fig 1-3 and fig 1-10). Graphite reflects light and, therefore, appears shiny.

(b) Carpenter's pencils (rectangular graphite) are used for special effects applications, such as drawing shingles, leaf patterns, and other subjects. See Figure 1-2 on how to sharpen and hold a carpenter's pencil, and an example of a special effect application.

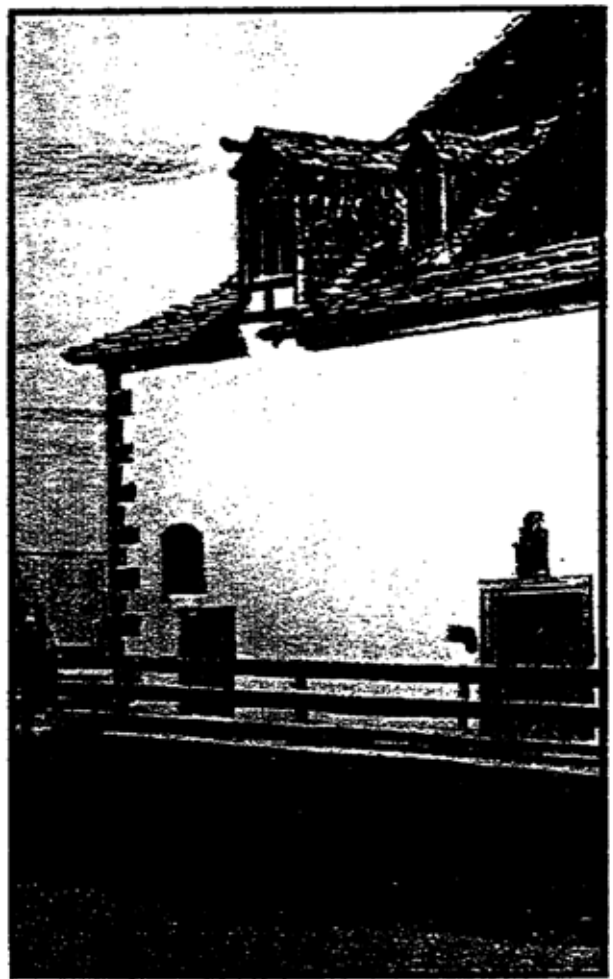
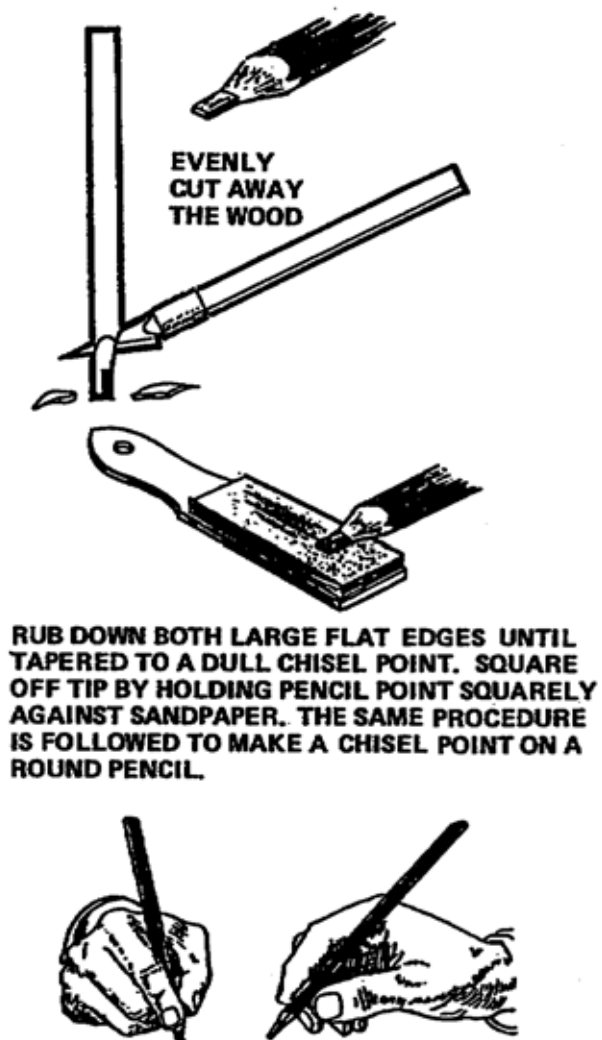


Figure 1-2. Sharpening and holding a carpenter's pencil  
and a sample of a special effects application

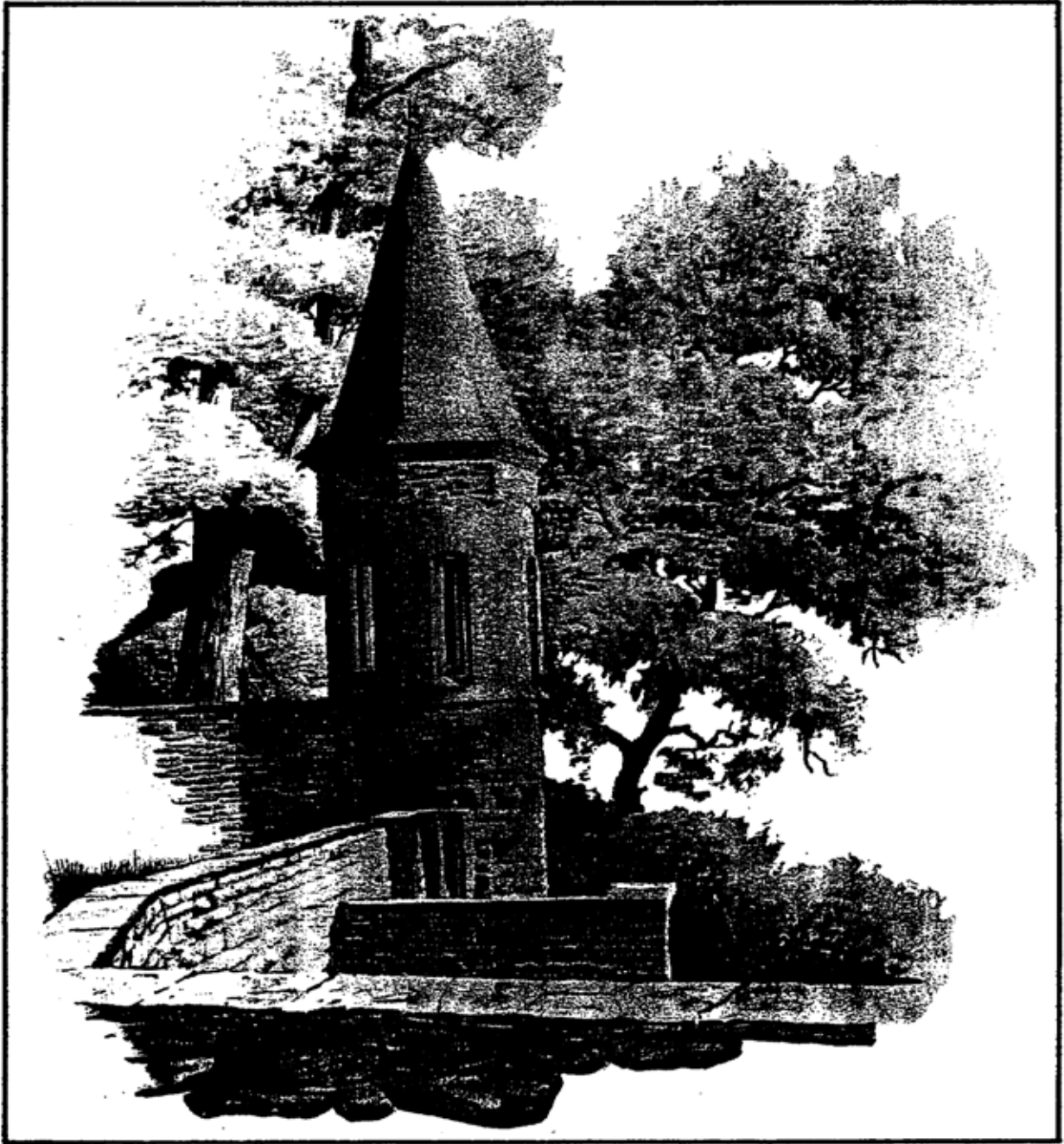


Figure 1-3. Example of pencil artwork

b. Pens consist of two parts: the point, and the holder. There are two different types of pens: quill pens, and reservoir pens. When drawing with these pens, use drawing ink.

(1) Quill pens (fig 1-4) (sometimes erroneously called dip pens). Load with an eye dropper containing ink. Add a drop of ink to the hollow (well) beneath the pen point. Do not dip the pens into the ink; never submerge the point completely. The points on quill pens may be either stiff or flexible. Use the stiff points to draw a line of consistent weight. Use flexible points to draw graded lines. Lineweight variations depends on the pressure applied.

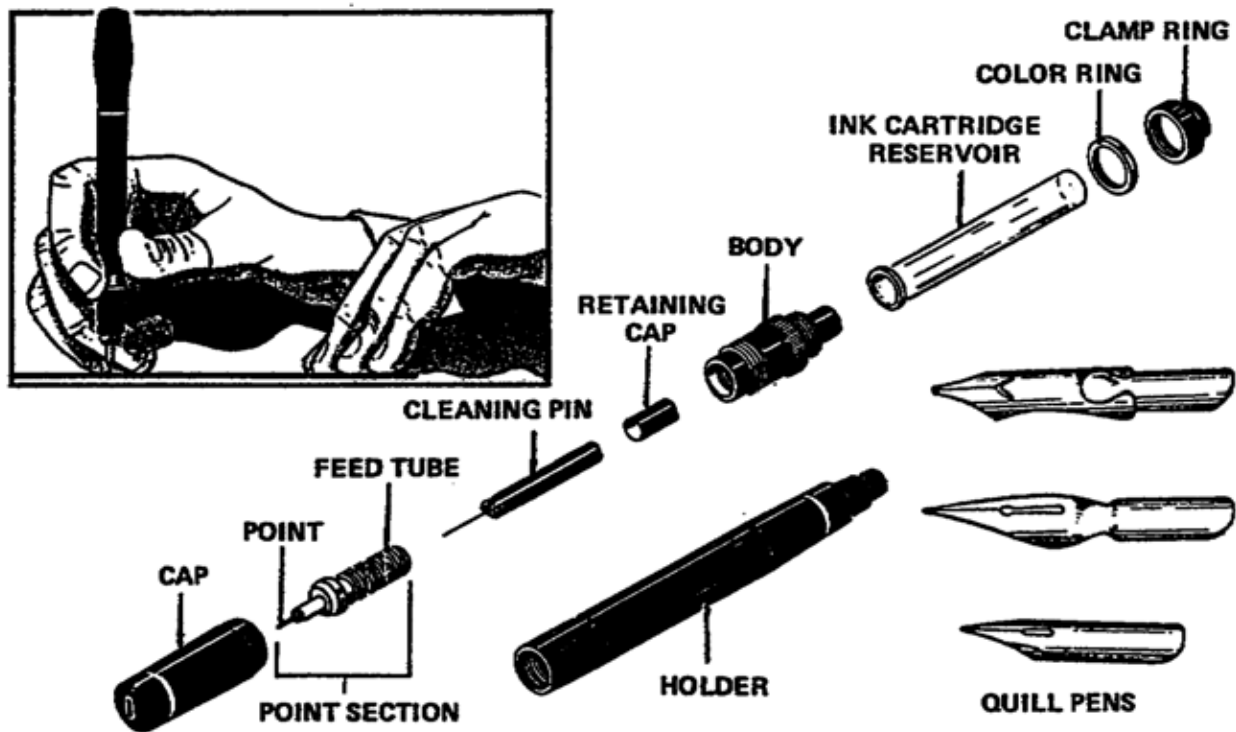


Figure 1-4. Pens

(2) Reservoir pens hold the ink supply within the pen itself, normally in the pen holder. They contain a reservoir which feeds ink to the point. Reservoir pens carry either drawing ink or writing ink, but never both. The most common examples of reservoir pens are fountain, ballpoint, and felt-tip pens. Fountain pens have interchangeable points and come in a variety of shapes, sizes, and degrees of flexibility. They resemble quill pens.

(a) Originally, technical fountain pens (fig 1-4) were used for ruling straight uniform lines in drafting. They are also suited to freehand drawings (figs 1-5A and 1-5B). These pens feature an ink reservoir attached to the barrel of the pen. Some reservoirs are translucent plastic cartridges within the body of the pen. Ink is delivered to the surface through a hollow shaft of a feed tube which forms the point. Ink flow is controlled by the cleaning pin and gravity. The large ink supply held by the cartridge reduces ink loading time and the chance of a spill. After using the pens, rinse all parts in running water and blot dry. If ink dries in the pens, soak them in pen-cleaning solution and clean them thoroughly.

(b) Ballpoint pens are similar to fountain pens. The ink is rolled on by a small ball located at the tip of the reservoir. The ink supply and point are permanently attached. When the ink is gone, throw out and replace the pen. Ballpoint pens sometimes require a wipe of the tip, otherwise there is no cleaning. They come in sizes from broad to extra fine.

(c) Felt-tip pens and markers have a nylon or felt core that distributes ink to the points. The point of felt tips, like ballpoints, is permanently attached to the ink supply. Throw the tool away when the ink supply is exhausted. These pens come in a large variety of different point sizes and shapes. The ink in most felt tips is waterproof and dries instantly.

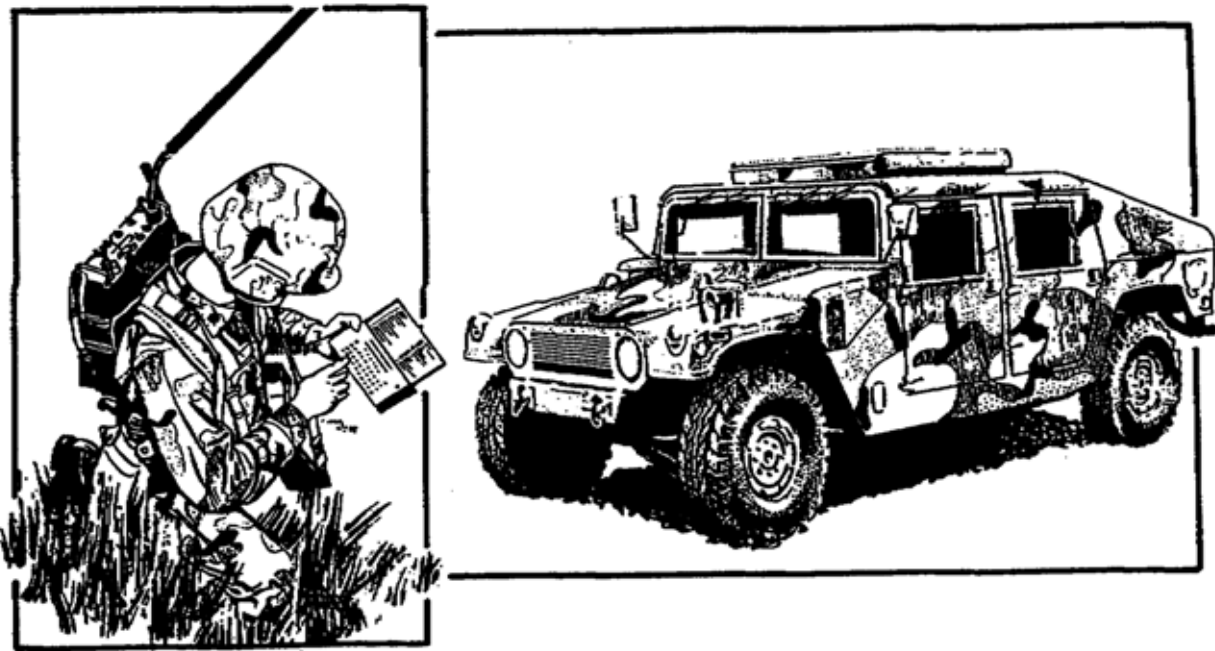


Figure 1-5A. Examples of pen and ink artwork

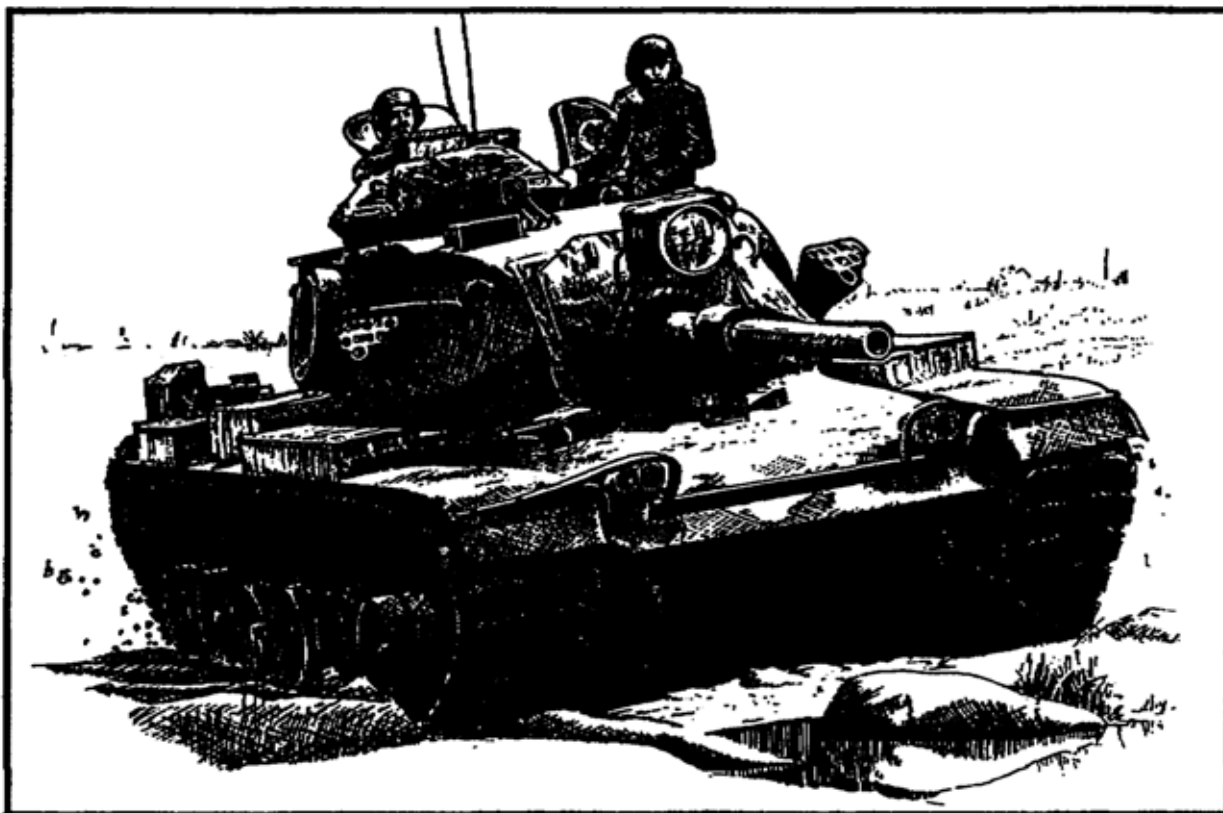


Figure 1-5B. Example of pen and ink artwork

c. Use brushes to apply most liquid media to a surface. The style of drawing, the medium used, and the technique required will determine the brush type you will use. The three most common brushes are the round, flat, and bright (fig 1-6).

(1) Round brushes come to points which vary from sharp to blunt. Use appropriately-sized rounds to apply or float on washes.

(2) Flat brushes have straight edges and broad tips. The flattened ferrule gives these brushes their shape. Flats should be about 2 1/2 times longer than they are wide. Use a large flat (1 to 3-inch stiff bristled) house paint brush for blending large areas of stiff tone or color media. Additionally, there are special use brushes, e.g., a fan brush for adding texture.

(3) Brights are shorter than flat brushes in that they are only about 1 1/2 times as long as they are wide. Brights have fairly sharp corners. Brights perform well for applying a thick, stiff medium.

(4) Brushes consist of three parts, the bristles or hair, the ferrule, and the handle (fig 1-6).

NOTE: As you progress, you may find your own preferences for use of each style and size of brush.

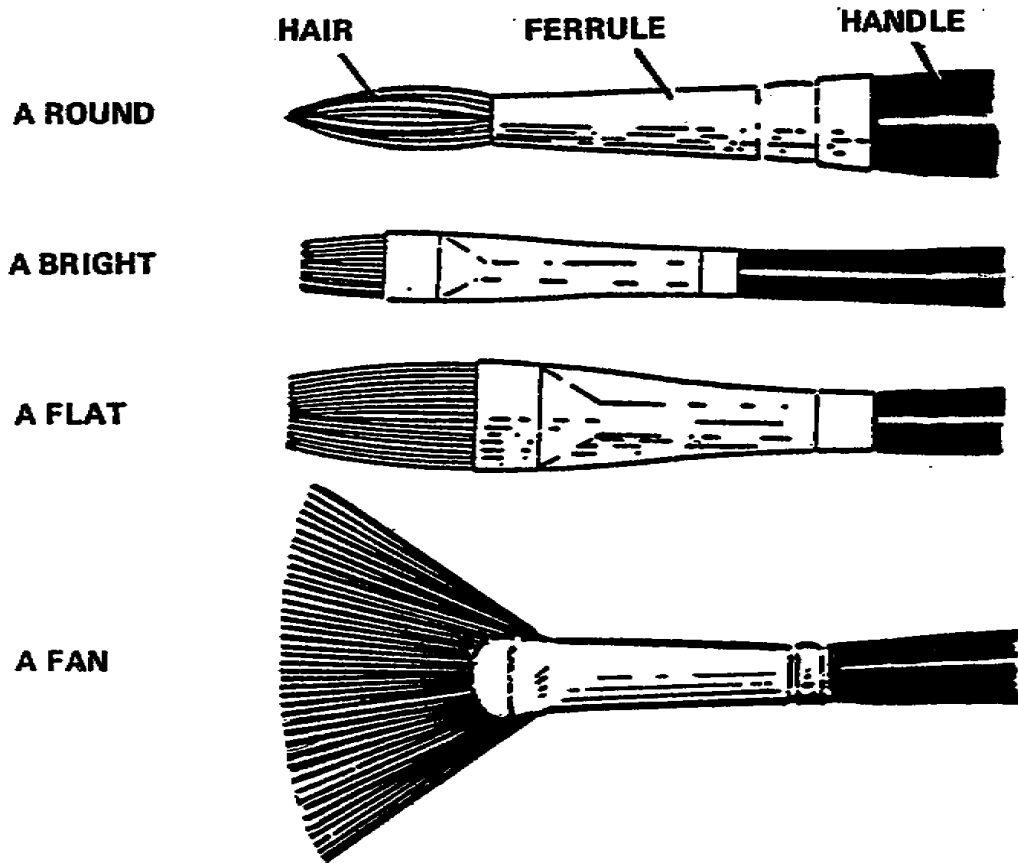


Figure 1-6. Parts and types of brushes

(a) The bristles or hairs of a brush can be red sable, camel's hair, hog hair, or nylon. Red sable brushes are the most durable and pliant. Camel's hair, hog hair, and nylon brushes are stiff. stiff brushes are ideal for thick media.

(b) Ferrule - The ferrule is the small tube which holds the form of the bristle and connects it to the handle. The size of the ferrule will determine the size and shape of a brush. Most ferrules are seamless metal while others are plastic.

(c) Handle - The handle is the part of the brush you hold when painting. Made of hardwood or plastic, the handle is marked with the brush size. Handles should provide proper balance for the brush.



Figure 1-7. Shading sheets

d. Shading sheets come in a wide variety of line and dot patterns and densities (fig 1-7). They are adhesive backed and printed on clear acetate or waxed paper. These sheets can save you a lot of time since you will not have to draw these patterns. Use shading sheets for line art reproduction methods.

e. Stumps are tightly rolled sheets of paper. They come in various thicknesses with both ends pointed. Use stumps to blend or smudge pencil, charcoal, or pastels.

f. A plumb is a tool used to measure proportions of and within your subject. A plumb is an object longer than it is wide and has a straight edge. A pencil or brush handle will serve as a plumb.

g. Erasers (fig 1-8) come in different levels of abrasiveness. Each affects the drawing surface to its own degree. Kneaded and artgum erasers have gentle abrasives. Use erasers minimally to correct drawings to avoid overcorrecting the artwork.



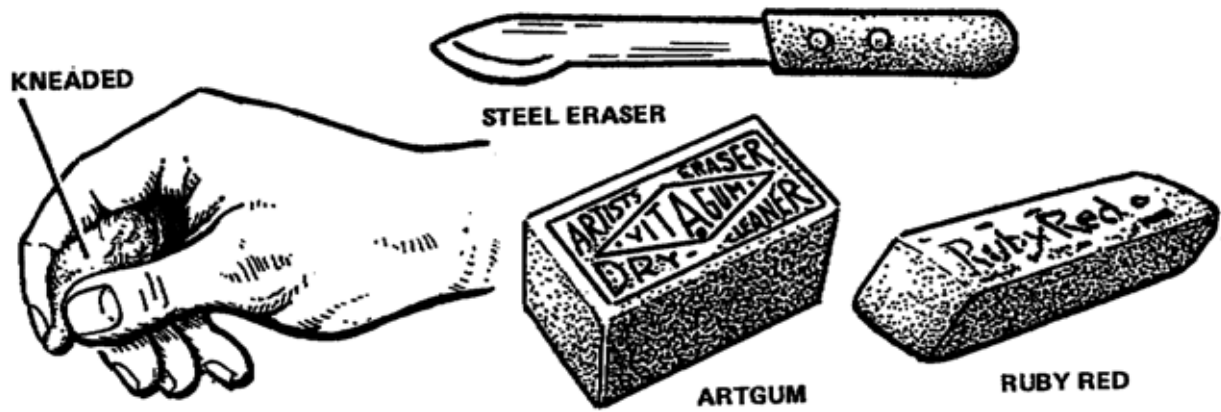


Figure 1-8. Erasers

(1) Kneaded erasers - These erasers do not rub the particles across the surface, but lift and absorb them, leaving little chance of smudging. Periodically after use, knead the medium picked up into the eraser. Shape these erasers into a fine point or an edge allowing pickup or lifting out of small areas. Use this as an excellent way to create highlights or other effects (fig 1-9).

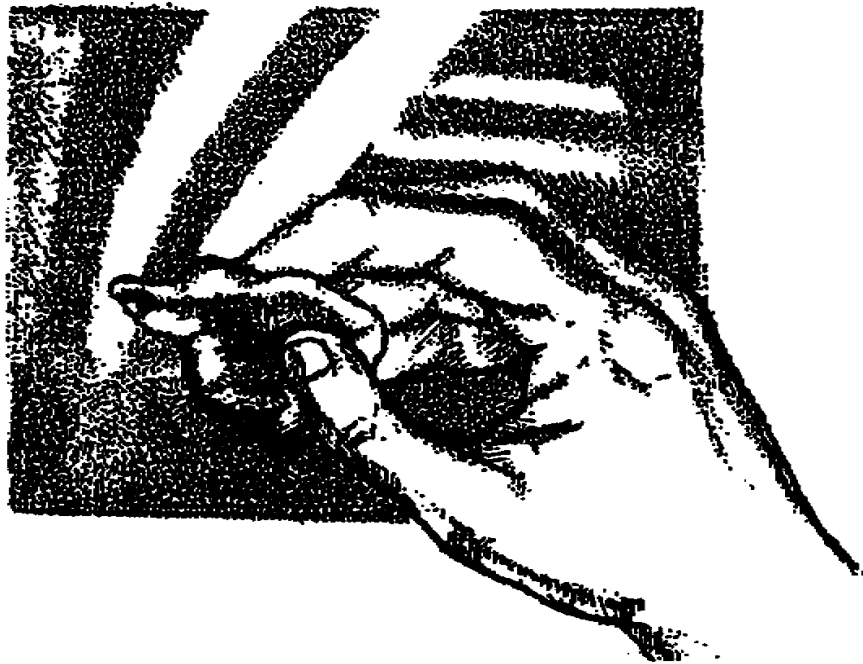


Figure 1-9. Example of erased highlights

(2) Artgum erasers - The very popular artgum erasers are soft, pliable erasers that will not mar a drawing. Use them primarily for removing smudges or fingerprints.

(3) Ruby red erasers - Ruby red erasers are firmer and more abrasive. Use them to remove light ink smudges.

(4) Steel erasers - The steel eraser looks like a scalpel. Using the eraser's rounded edge, lightly scrape excess dried ink. Once done, follow up with the ruby red eraser to remove remaining ink. Remember to reburnish the surface of the paper or board before re-inking or a large "bleed" will occur.

h. White-out correction fluid comes in a water or oil base for covering small errors made in line media work. Use the appropriate type for the line media used. Use white-out on camera-ready line art when waterproof ink has been used. Certain ink mistakes will bleed if water-based correction fluid is applied as a cover up.

i. Fixatives are thin, lacquer/varnish-like liquids sprayed on drawings. These varnishes will keep the media from smudging and help to protect the drawing from ultraviolet (UV) yellowing. Some types of fixatives are glossy, workable, nonworkable flat, and UV.

#### Learning Event 2:

#### IDENTIFY AND DESCRIBE VARIOUS DRAWING SURFACES, THEIR COMPOSITION, AND MEASUREMENT DESIGNATORS

1. The surface to which you apply media is of major importance. The most common surfaces are various papers and drawing board. Paper is made by putting various fibrous materials through unique milling, processing, refining and finishing methods. The texture of the surface, tooth, bites off the dry media as it is dragged over the surface.

2. Paper used for drawings may be smooth or rough textured (toothed). A good drawing paper with a rough surface bites and holds graphite better. A rough surface will give high contrast to pencil drawings. A firm, smooth finish will result in low pencil contrast. Make ink drawings on smooth, firm-finished paper or cardstock. Apply washes to a thick, absorbent water color paper surface. Be careful not to apply too much wash or the paper will buckle.

3. Papers are measured in percentage of rag content and acidity/alkylin balancing.

a. Rag content (measured in percent) refers to the amount of cotton fiber contained in the paper. Originally, paper was made using a crushed wood fiber process. Ultimately, cotton fibers were added. In milling cotton, long fibers are used in textiles; short fibers are used in milling various papers. The cotton fiber content increases the papers' permanence, strength, and durability. The increased quality is also reflected in cost. Newsprint has very little to no cotton fiber while 100-percent rag is found in various linens which contain no wood fibers. With the advent of synthetics, cotton fibers are used less and less.

b. Paper milling processes contain acids. Acid content in papers have a negative reaction with surrounding elements. Air and light weaken and yellow paper with time. Acidity can be neutralized in the milling process by adding an alkalin. Acid free, or neutral papers have a pH balance measurement of 6.5 to 7 on a 0 to 14 scale. They are the most desirable because they least affect the illustration and stay white the longest. Be aware the pH balance can be affected by some art materials (media).

c. The surface hardness and texture are further determined in the final stage of milling. Some papers or board have a very Smooth, hard surface, while others may be textured, soft, or both. Experiment with as many as possible to become knowledgeable.

4. Board should have an appropriate texture for pencil or ink drawings. The tooth of smoother surfaces is good for ink drawings, but may not bite off enough of dry medium for accurate contrast. The best surfaces for ink drawing should be firm and smooth. Ross board has a rough tooth to make pencil drawings appear camera ready, like line art. Use a soft pencil, e.g., 4B. or 6B.

5. Refining drawing skills will lead to projects using other surfaces and tools. Many styles, surfaces, textures and colors are available. Each creates its own effect depending on the medium and application you use. Experiment with them for familiarity and self improvement (fig 1-10).



Fig 1-10. 4B (soft) pencil on watercolor paper (Notice the effect of the paper's texture)

## LESSON 1

### PRACTICE EXERCISE

#### (PERFORMANCE-ORIENTED)

**TASK:** Identify various tools used to make a realistic image, know how to use tools, and the composition and measurement designators of drawing surfaces.

**CONDITIONS:** Given information and terms pertaining to different tools and drawing surfaces.

**STANDARDS:** Demonstrate competency of the task skills and knowledges by correctly responding to 70 percent or more of the multiple-choice test covering tools and drawing surfaces.

#### **INSTRUCTIONS:**

In each of the following questions, **SELECT** the one answer which **BEST** completes the statement or answers the question. Indicate your response by circling the correct letter below.

To meet the 70 percent criteria, you must correctly answer 6 of the 8 questions in this practice exercise.

1. Which response states what you use to apply, remove, and affix an illustration on a drawing surface?
  - a. Vehicles
  - b. Tools
  - c. Ross boards
  - d. Wells
  
2. Which tool(s) is/are the least expensive and most commonly used item(s) for drawing?
  - a. Conte crayons
  - b. Pen and ink
  - c. Oil gouache
  - d. Pencils

3. Which grade pencil would you use to make dark tones in your illustrations?
  - a. 6H
  - b. 2H
  - c. HB
  - d. 4B
4. Which of the tools do you use to apply liquid media?
  - a. Pencil
  - b. Brush
  - c. Crayon
  - d. Pastel
5. Which of the following papers is best for applying a wash?
  - a. Ross board
  - b. Tracing vellum
  - c. Watercolor paper
  - d. Railroad board
6. You have pencils as your only medium. You need to make camera-ready art for reproduction. Which drawing surface should you use?
  - a. Ross board
  - b. Railroad board
  - c. Drawing paper
  - d. Card stock

7. Which of the following do you use to protect a drawing?
- a. Workable fixative, erasers, plastic
  - b. Paint, acetate, crayon
  - c. Lacquer, ink, paste
  - d. Fixative, acetate, lacquer
8. Which paper has the best rag content and surfaces for ink drawing?
- a. 50-percent rag, smooth and soft surface
  - b. 100-percent rag, smooth and soft surface
  - c. 15-percent rag, rough and hard surface
  - d. 100-percent rag, smooth and firm surface

LESSON 2  
PRINCIPLES OF REALISTIC DRAWING

TASK

Identify and define the principles of realistic drawing and their interrelationships.

CONDITIONS

Given information and examples of the principles of drawing, symbols, and the systematic approach.

STANDARDS

Demonstrate competency of the task skills and knowledge by correctly responding to 75 percent or more of the multiple-choice test covering principles of drawing.

REFERENCES

NAVEDTRA 10472, CHAPTER 2  
STP 11-25Q13-SM-TG, TASK 113-579-5056

Learning Event 1:  
DEFINE REALISTIC DRAWING

1. To draw realistically, you must first learn to see realistically. Be aware of what is really there. "What you see when you look" is visual reality. Being real, everything has three dimensions: height, width, and depth. Visual reality is anything which exists that you see. Examples are trees, rocks, clouds, air effects, and light. Your mind becomes so accustomed to daily surroundings that you overlook what is actually there. When you draw these subjects, you suddenly realize you are not sure of what is there or how to draw the subject accurately. Motivation, time, and observation skills will help to overcome this "visual pacifism." Once overcome, you will be on the road to visual accuracy (fig 2-1).

There are three principles of drawing: visual accuracy, a systematic approach, and practice. Given enough desire, time, and guidance, one can easily learn and master these principles. Knowledge and use of these principles will help you to create accurate images of subjects around you.



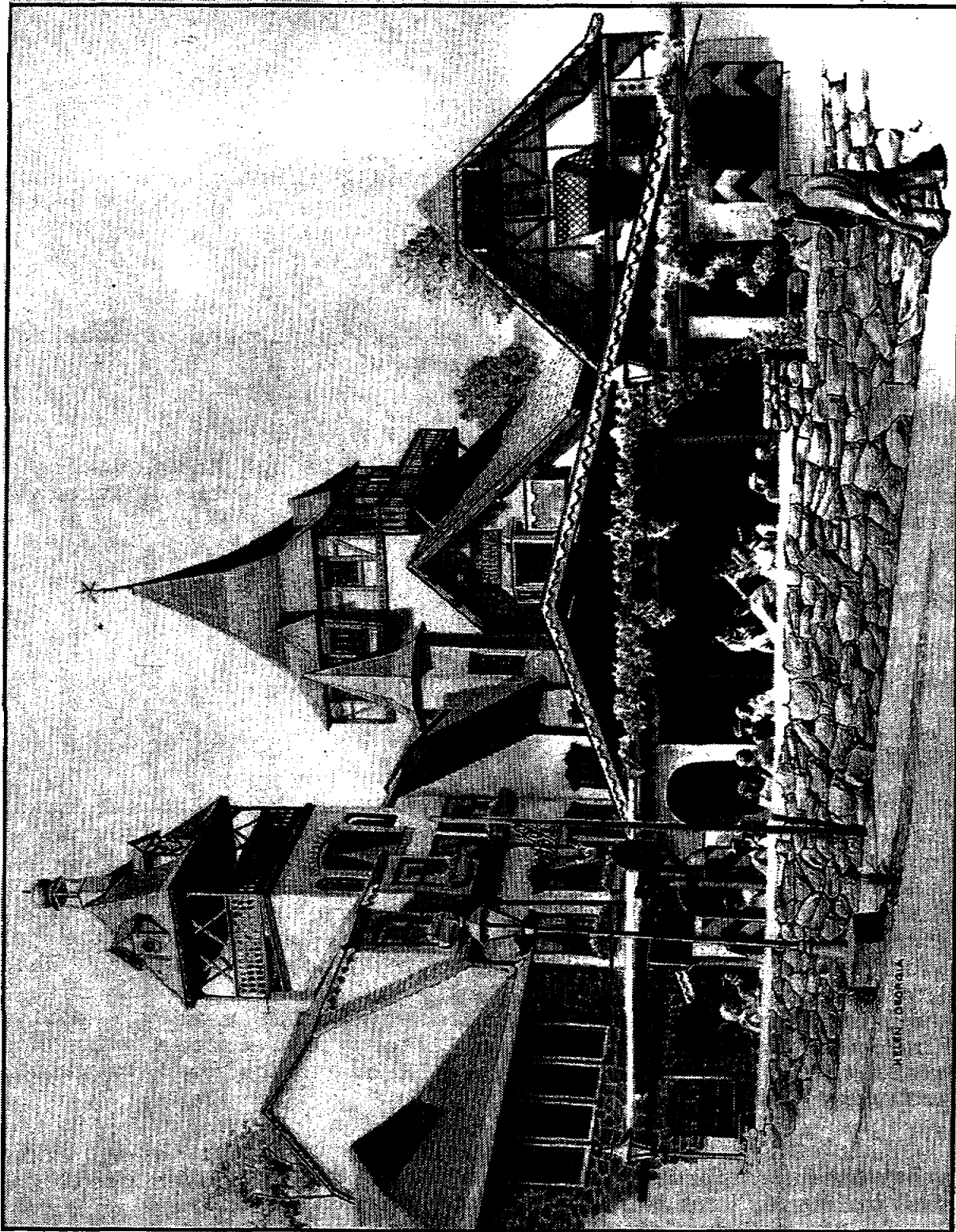


Figure 2-1. Example of a realistic pencil drawing

2. Visual accuracy is correctly transferring visual reality to the drawing surface (fig 2-1). Together, they are a drawing. Visual accuracy deals with only two dimensions: height and width. Adding depth to an illustration is creating an illusion, which you can master with much desire and practice. To achieve visual accuracy you must use self-analysis, a systematic approach, and practice.

a. Self-analysis is a continuous comparison exercise. Analyze what you see in visual reality (shapes, sizes, locations, edges, textures, colors, or tones), then compare it to your drawing. Adjust the illustration as needed. Make studies (sketches) of the subject and compare them to what is there. Stay away from symbols.

(1) A symbol is a generalized representation of an object or being (fig 2-2). When a child wants to draw, he finds paper and pencil, chooses a subject, and creates his own masterpiece. He does it without training or guidance, using trial, error, and guesswork because he has no formula to follow. Mom or Dad admires the handiwork and put it on the refrigerator for all the world to see. They gave no instruction or guidance, only sincere words of approval and encouragement. This gives the child important feelings of pride and accomplishment. This positive parental trait motivates the child to continue even though he doesn't know what to do.



Figure 2-2. Examples of symbols

His drawing did not look the way he intended. It was a symbol, a simplified version of the subject he chose to draw. This is a logical way for anyone to start drawing. Unfortunately, symbols don't show what the world really looks like. Using the principles of drawing, you will learn to draw realistically, and the importance of avoiding symbols.

(2) Symbols interfere with your progress through drawing. They tell your mind that a subject looks a certain way in spite of how it really looks. These symbolic drawings take away the subjects' subtleties that make them appear real. These subtleties could be a line quality, tone, form, or a texture. Self-analysis will help you to avoid drawing symbols.

b. Seeing abstractly is viewing a subject as a series of unrecognizable shapes, and it can help you to avoid symbols. For example, if you turn a photo upside down to copy it that way, you will see the image differently. From this point of view, you will avoid symbols. You can be quickly on your way to visual accuracy. You should practice this as an exercise.

3. The second principle of drawing is a systematic approach to drawing. The systematic approach consists of four steps: determining the subjects' forms, determining their proportions, representing them with contours, and shading them to emphasize the illusion of depth. Following this four-step formula of form, proportion, contour, and shading will help you to draw any and everything. Separate learning events explain each step in depth. You must understand and do each step correctly and in sequence to achieve visual accuracy.

a. You can use the systematic approach not only as a method for drawing but also as a method of analysis. You can determine how realistic your drawing is by using each step as a checklist. This analysis should be done at each step. Make visual comparisons between the drawing and the subject. It will help keep your work accurate and on track. The systematic approach works together with the next characteristic - practice.

b. The systematic approach is the most efficient method for learning to draw. Practice each step in order and do them accurately.

4. Practice is the process of improving on a task through repetition. As you complete a drawing, you can compare it to the subject for accuracy. If it is not correct, you can determine why by going through the steps of the systematic approach. You must do every step correctly and in sequence (form, proportion, contour and shading) to make the drawing as accurate as possible.

When you discover what went wrong, you can correct the mistake and concentrate on that step of the systematic approach. A good suggestion is: always carry a small sketch pad with you, and set a goal of 4, 8, then 12 pages of practice per day. Practice can be any time, any place, and on any subject.

NOTE: We stress realism and accuracy because of graphic artistic, and printing applications. Illustrations are used in event documentations, training publications, manuals, historic art, references, and representative visualizations. Individual styles will develop over time.

## Learning Event 2: DEFINE FORM

1. Form is three-dimensional shape. Everything perceived in visual reality has the three dimensions: height, width, and depth. When preparing to draw, look at the subject and simplify its forms. Visual accuracy is the representation of three-dimensional objects on a two-dimensional surface.

You must be able to recognize form easily to draw what you see. Of the three dimensions, height and width are the simplest to check and adjust in an illustration. Depth, however, is the most difficult and takes the most practice to master on a two-dimensional surface. Read about depth more thoroughly in other areas of this course.

2. You must initially ignore your subjects' details and break them into their basic forms. The basic forms are the cube, cone, cylinder, and sphere (fig 2-3) and everything in visual reality can be part of one or more than one of these. Anything in a drawing can be made from any combination of the basic forms. Modifications and subtleties may be added as your drawing is ready.

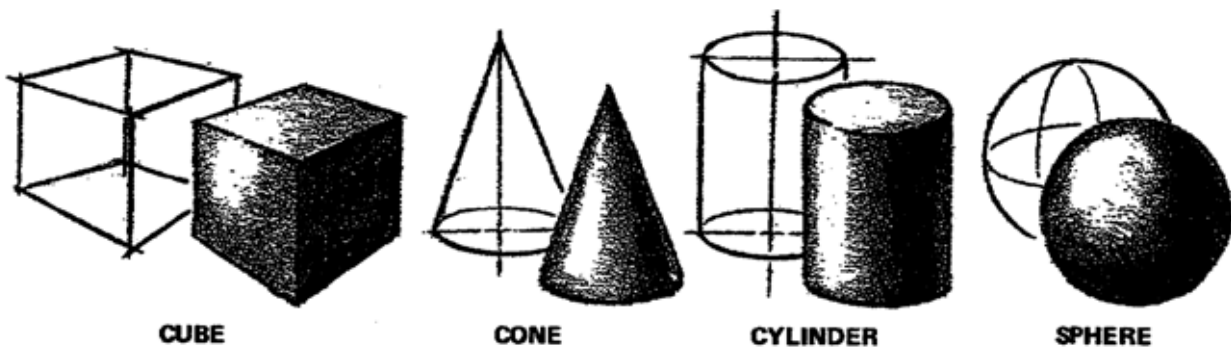


Figure 2-3. Examples of the basic forms

3. Recognizing and using forms.

a. Pause and look around you and/or outside a window. Break all of these objects into their basic forms. The building you are in is most likely a series of cubes. A fire hydrant may be a cylinder with half spheres attached. Note books, furniture, vehicles, people, anything you may see. Recognizing these basic forms helps develop understanding of your surroundings.

b. An incomplete form is part of one of the basic forms (fig 2-4).

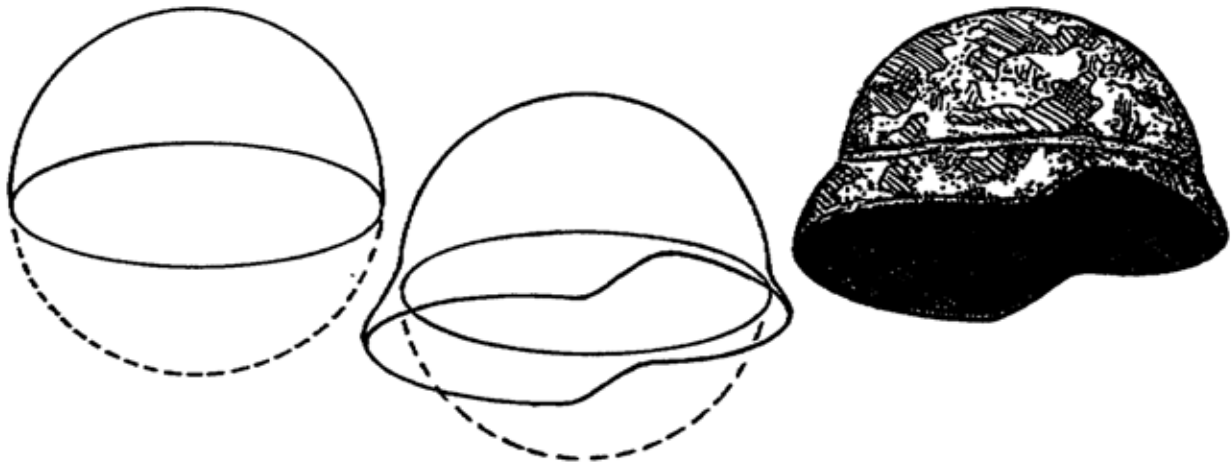


Figure 2-4. Examples of incomplete forms

c. A complex form consists of two or more of the basic forms (fig 2-5). Bypass the many details (small basic forms) of a subject to see the larger, simpler, basic forms and avoid getting lost in the concentration on details. Draw simple to complex. Start with large basic forms and go to smaller forms last. When adding details, remember they are not always necessary.

d. There are two other kinds of forms, rectilinear and curvilinear. You must draw each based on what you see.

(1) Curvilinear forms are soft, irregular edged, and are usually found in nature. A tree, a cloud, mountains, or even a person are examples. You may have to draw a curvilinear form with imperfect lines to soften its edges.

(2) A rectilinear form has hard edges, is geometrically perfect, and is usually man-made. Some examples are a house, airplane, fire hydrant, and a tank. Therefore, rectilinear forms are almost always complex.

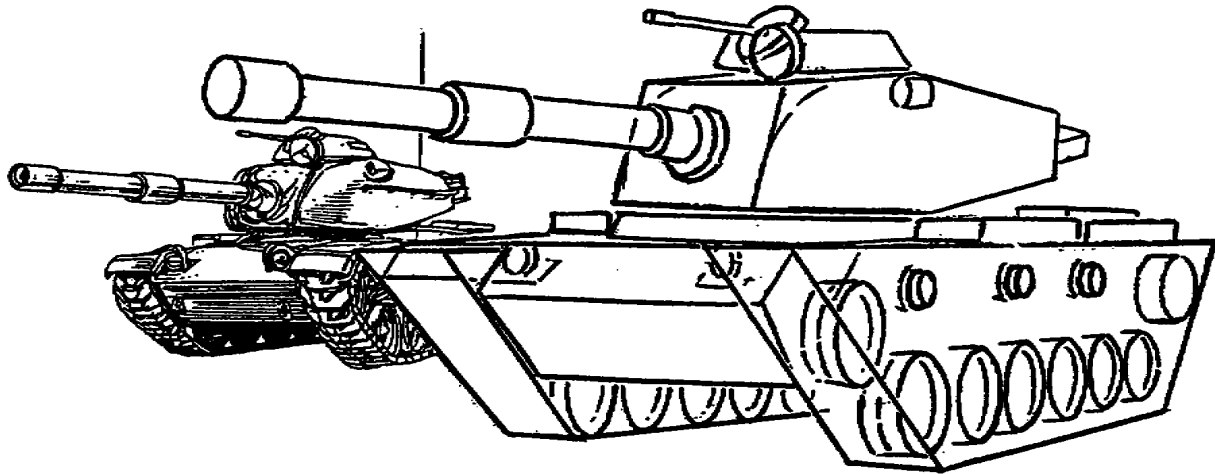


Figure 2-5. Examples of complex forms

4. Form is adaptable. Draw basic forms based on visual reality rather than four specific shapes. For example, draw a rectangle rather than a cube, to represent the trailer head in the figure drawing (fig 2-6). Modify basic forms to fit the subject. Let your mind's eye accept the image for its actual shape and draw exactly what you see. This helps to avoid symbols.

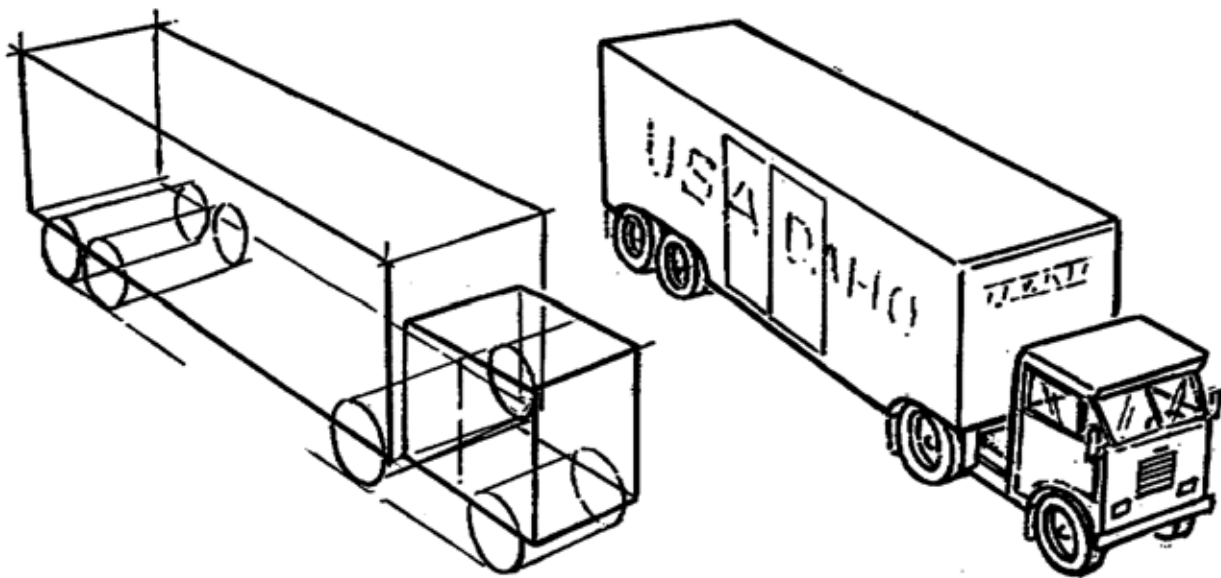


Figure 2-6. Adaptability of form

5. Depth and structure are the two qualities (visible traits or characteristics) of form. Capture these two qualities in your illustrations while avoiding details. Draw details as the need arises.

a. Depth is the most difficult of the three dimensions to capture and is an illusion in a drawing. The use of perspective drawing is one way to help create this illusion. The illusion created is distance. No one step of the systematic approach creates depth. It is achieved through the entire process (fig 2-7). The following paragraphs give a brief introduction to perspective constructions.

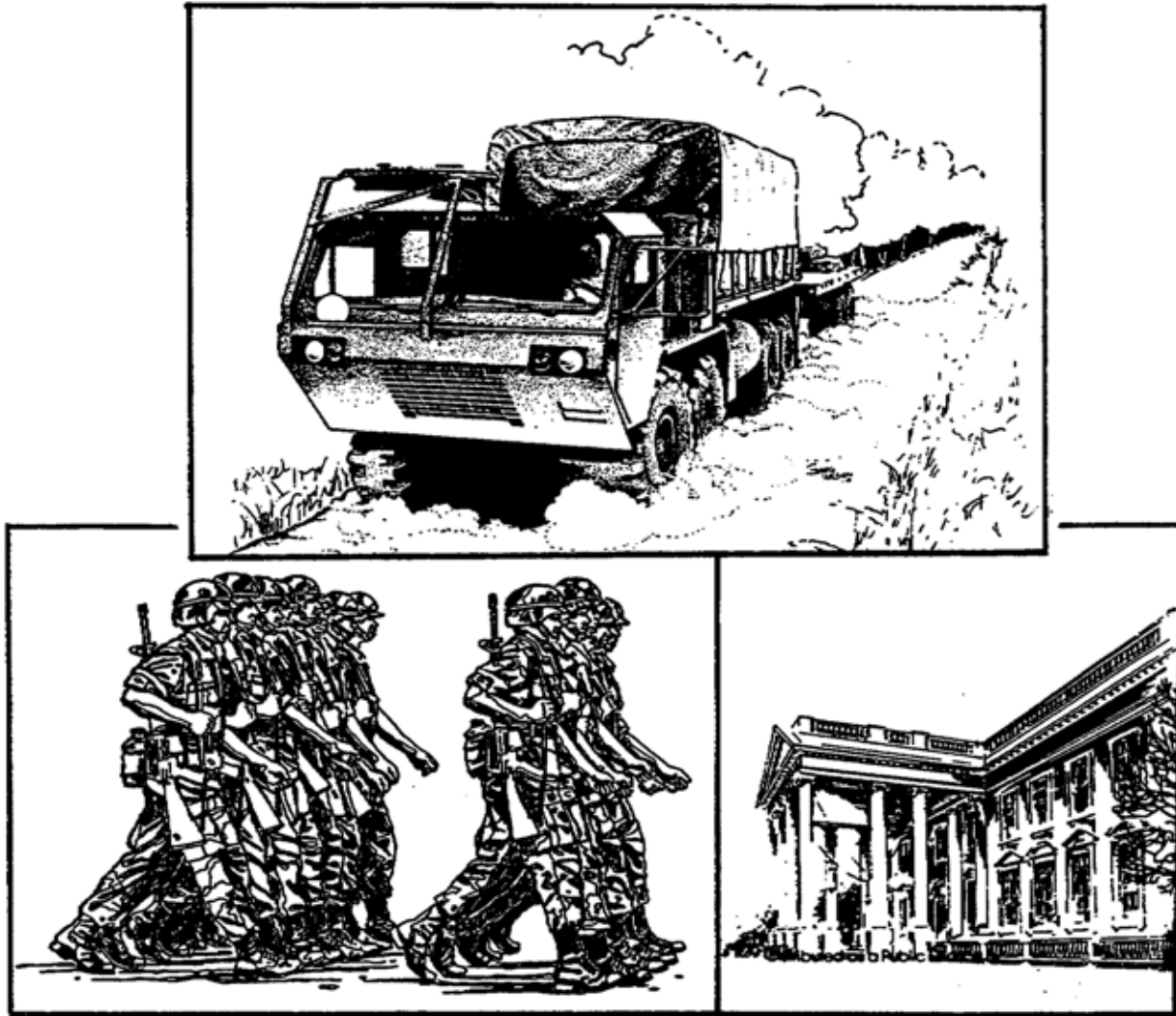


Figure 2-7. An example showing depth

(1) Perspective drawing creates the illusion of distance through the fact that all lines going away from the observer appear to come together at some distant points. For example, to a person looking down a long stretch of railroad tracks, the tracks will appear to merge or disappear (an illusion) at a single point in the distance. This point is called a vanishing point. It is one of the three most important factors in perspective drawing.

(2) The second most important factor in perspective drawing is the station point. The station point is the position of one of the observer's eyes (fig 2-8). The location of the station point determines the perspective. For instance, a house is perceived differently at ground level from the top of an adjacent three-story building.

(3) You should think of the object to be drawn as resting on a horizontal ground plane perpendicular to the picture plane. The boundaries of the ground plane are two separate lines, the ground line and the horizon line (fig 2-8).

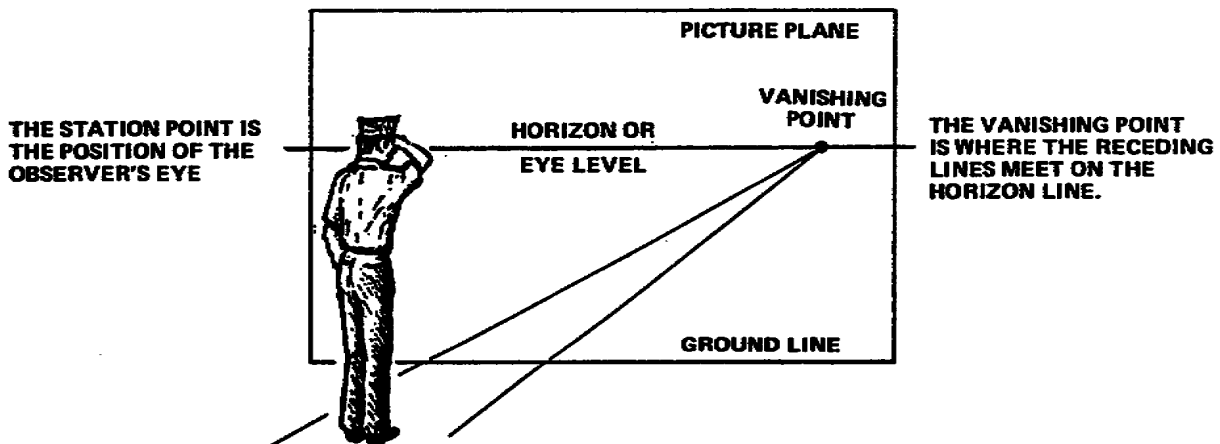


Figure 2-8. Perspective nomenclature

The horizon line is the third most important factor in perspective drawing. Objects may appear differently, relative to their position above or below the horizon line (fig 2-9). Notice how circles of an angle appear as ellipses. The angle at which they are seen will determine their narrowness.



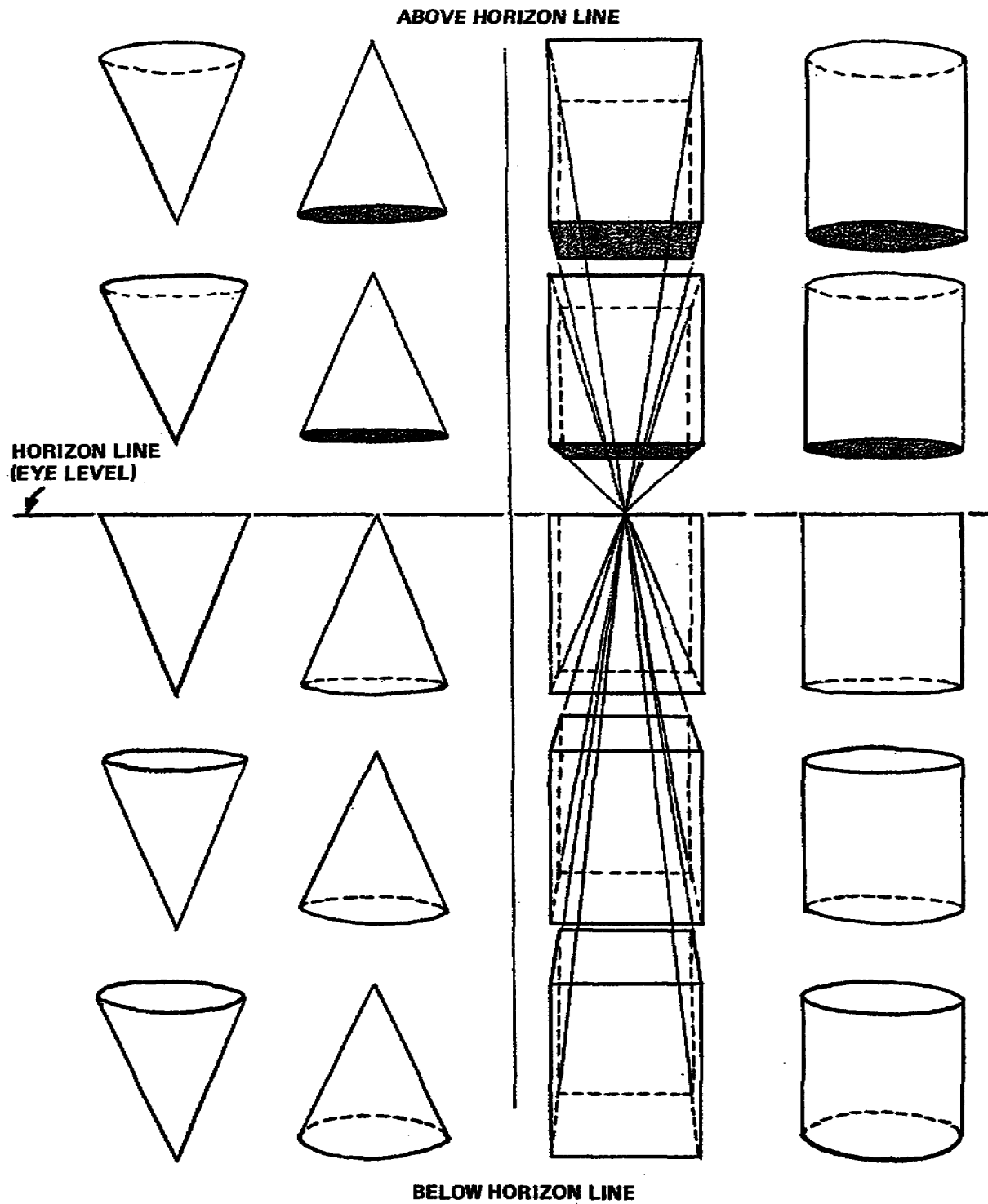


Figure 2-9. Changes in shapes due to their position above or below the horizon line

(4) There are three types of perspective construction: one-point, two-point, and three-point.

(a) One-point exists when two dimensions, an object's height and width, are parallel to the picture plane (fig 2-10A).

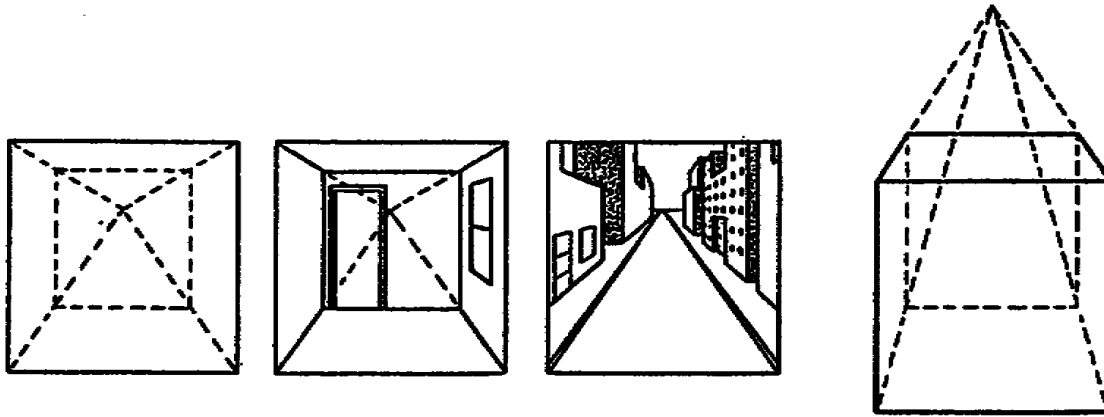


Figure 2-10A. One-point perspective

(b) Two-point, or angular, is when the object is sitting at an angle to the picture plane. There are two sets of horizontal lines or planes converging toward two separate vanishing points on the eye level or horizon line (fig 2-10B).

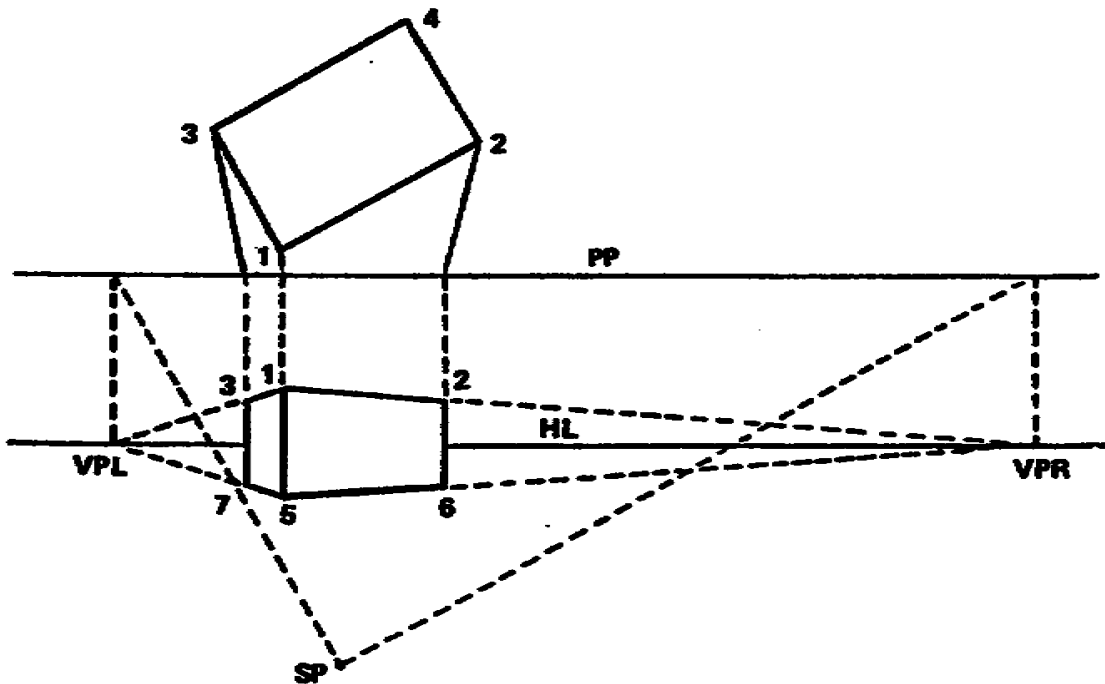


Figure 2-10B. Two-point perspective

(c) Three-point is when none of the object's surfaces (height, width, and depth) are parallel to the picture plane (fig 2-10C).

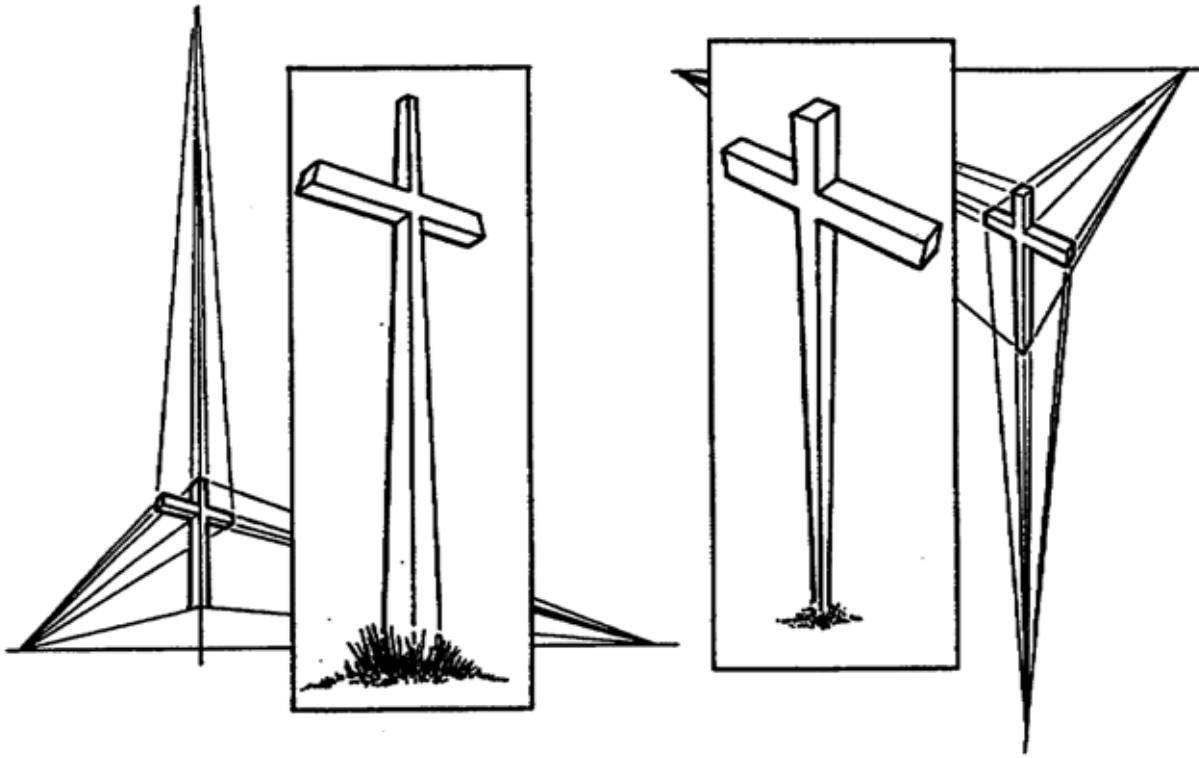


Figure 2-10C. Three-point perspective

(5) The Army Correspondence Course Program (ACCP) offers the subcourse "Draw Subjects in Perspective" (SS 0526). This subcourse offers a more in-depth explanation on perspective construction.

b. Structure, the second quality of form, refers to how the parts make up the whole. Some objects are simple forms, while others are more complex. A drawing, whether simple or complex, must be broken down into its most basic forms, and put together in their proper places. Paying attention to structure sets up spatial relationships which are the foundation of other steps of the basic procedure (fig 2-11).

(1) Spatial relationships refer to the space taken up by an object and where these objects are placed in the overall subject. A rule in visual reality is that no two forms can occupy the same space at the same time.

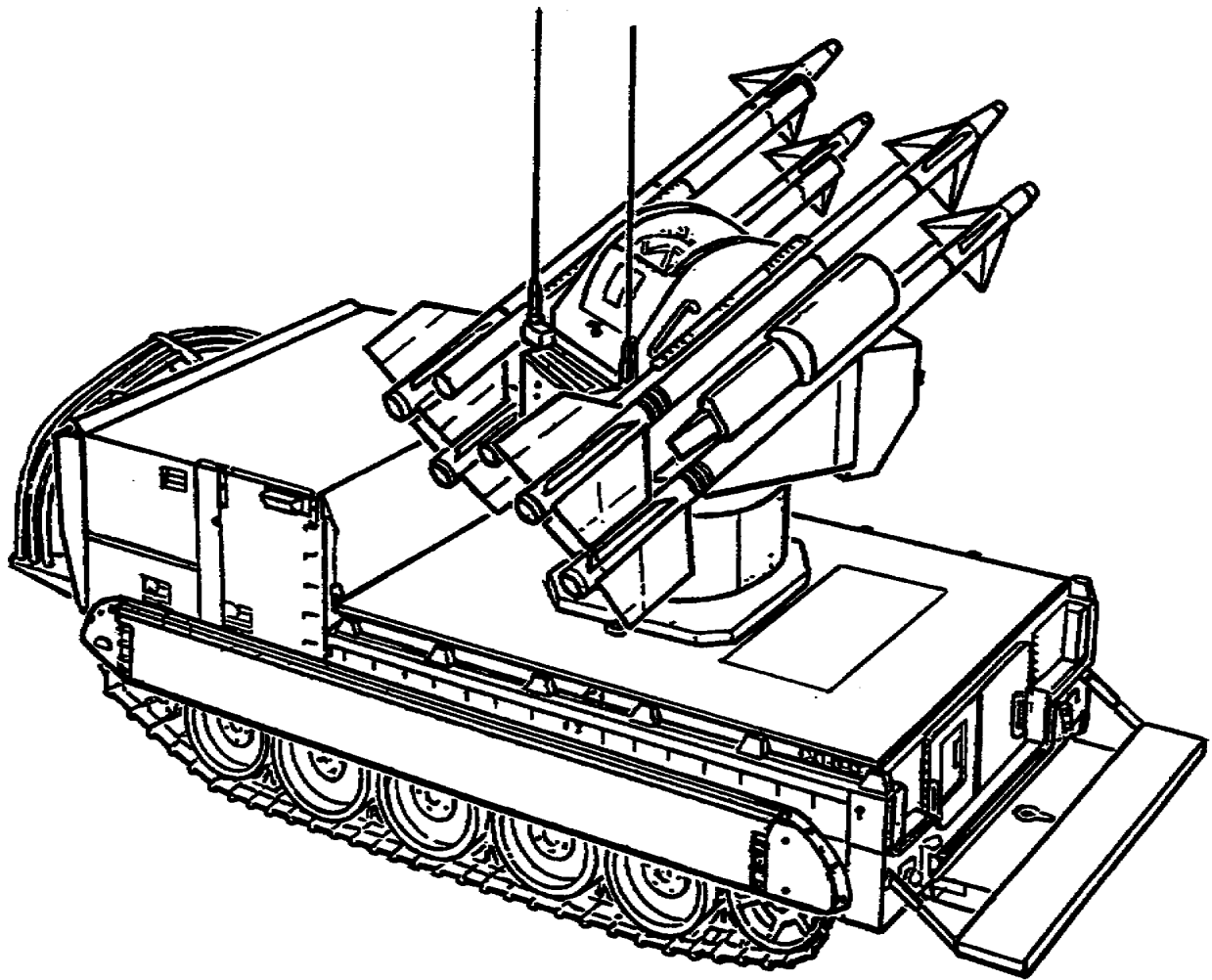


Figure 2-11. A study of a subject's structure

(2) Avoid a two-dimensional look and begin to add depth by drawing through. Drawing through is drawing an object as if it were made of glass. Drawing through (fig 2-12) allows you to see the depth and structure of the object. This method will prevent you from drawing two objects that occupy the same space. It will also help you to understand the spatial placement of the forms within the illustration.

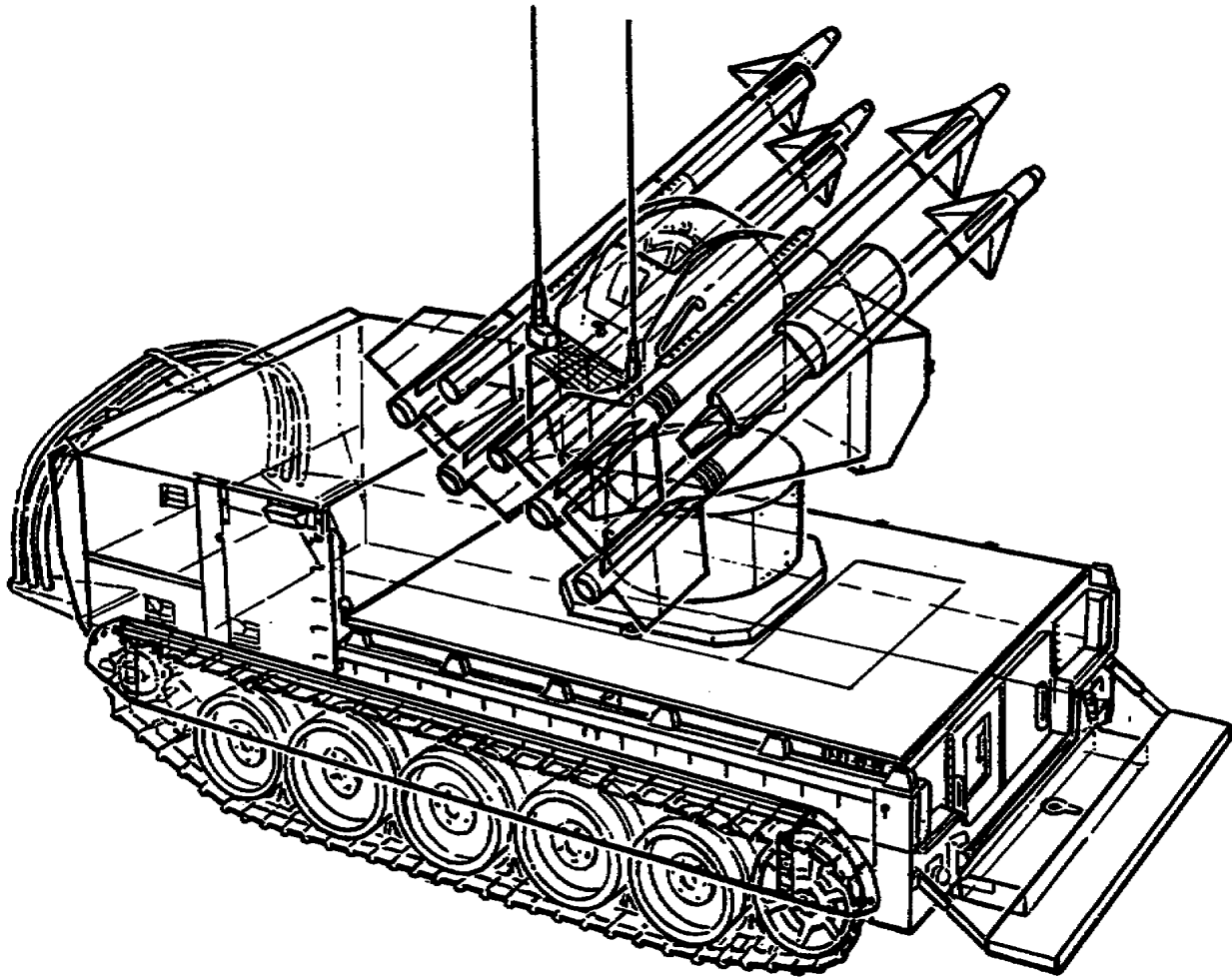


Figure 2-12. Example of drawing through

### Learning Event 3: DEFINE PROPORTION

1. The second step of the systematic approach is proportion. Proportion is the relative size and location of one form to another. When you draw, the size of all forms must remain

proportional to each other. Proportion has two qualities: size and location.

a. Size is the first quality. The object appears large when it is seen closer while that same object at a distance appears small. In order to draw a subject realistically, draw objects as they appear proportionally.

b. The second quality is location. The illustrator may draw an exact copy of the object, but it must be located correctly to give the drawing an accurate appearance.

2. Proportion requires the illustrator to measure and compare an object's proportions within the subject area. Train to see two-dimensionally. You must disregard the third dimension, depth, and draw what you see. Some freehand artist/illustrators can do this very quickly, seemingly with great ease. Practice drawing using these measuring techniques: grid, subject rectangle, and plumb.

a. The grid is a series of equally-spaced, horizontal and vertical, parallel lines which form squares (fig 2-13). Use the grid as a guide in sketching the subject's forms in proportion. Plot points of intersection on the grid much like you would do on a map. A step-by-step explanation follows.

(1) Draw a series of grid lines over drawing number 1 (app A-2). To avoid damaging the illustration (or photograph), use an acetate overlay and grease pencil to set up the grid. When the latter method is used, tape the grid to the photo for a constant reference. For this exercise, use one-inch squares (sample, app A-3). Adjust the squares accordingly for larger or smaller photos. Make the drawing twice the size, for example, 1-inch by 1-inch original to a 2-inch by 2-inch drawing.

NOTE: There is a grid with 1/2-inch squares to use with more detailed photographic subjects (sample, app A-4).

(2) Draw a separate grid on a piece of paper (fig 2-13). Draw this grid proportionate to the desired size the copied illustration will be. For instance, make one-inch squares for the original and two-inch squares for the art. Draw grid lines lightly as they will need to be erased later. Enlarging or reducing can be done as required using this technique. Many mural artists use this method to simplify great enlargements of their illustrations.

(3) Next, number on one side and letter the grid on the top or bottom (fig 2-13). This helps to transfer images correctly from one area to another.



Figure 2-13. How the grid works

(4) Now, copy the illustration (or photo), grid square by grid square until all lines are finished. Lightly draw lines to allow easy corrections. Also, erase the grid lines before going on to later stages of the basic procedure.

b. The rectangle method is the best and simplest for free-hand drawing of proportions. It breaks the subject into a series proportionate rectangular measurements. These rectangles establish the proper height and width of the objects within the subject area. It enables transferring measurements more easily from the source to the drawing surface. Pay close attention to any angular measurements or references in the subject. A step-by-step explanation follows:

(1) Establish the overall height and width of the subject by drawing a rectangle on the illustration or photograph. Use drawing No. 2 (app A-5) for this exercise. Again use acetate and a grease pencil to keep the photo intact. This rectangle should touch the highest, lowest, extreme left, and extreme right of the subject (fig 2-14). Now the subject rectangle is established.

(2) Next, construct rectangles around all major objects within the subject rectangle (fig 2-14). These "object rectangles" show the overall height, width, and location of the objects within the subject area.

(3) Transfer the subject and object rectangles to the drawing (fig 2-14). This can be done freehand, but a ruler or straightedge helps when drawing straight lines. Transfer the measurements from the photo to a drawing surface the same proportionate size for this drawing. Enlarge or reduce the drawing at this stage, as desired.

(4) Using rectangles and angles as a reference, lightly sketch in the linework (fig 2-14). Erase the unnecessary lines on the drawing surface as the final step. As you become more proficient, you will be able to draw visually without much measuring.

c. The plumb method is the most widely used method for gathering proportional measurements in freehand drawings. This method is also superior when drawing from life. A plumb is any object that is longer than it is wide, having a straight edge. Examples are a pencil, paint brush, or strip of wood. The plumb method involves using the tool for comparing and transferring measurements; either exact or proportional. A description of how this is done follows.



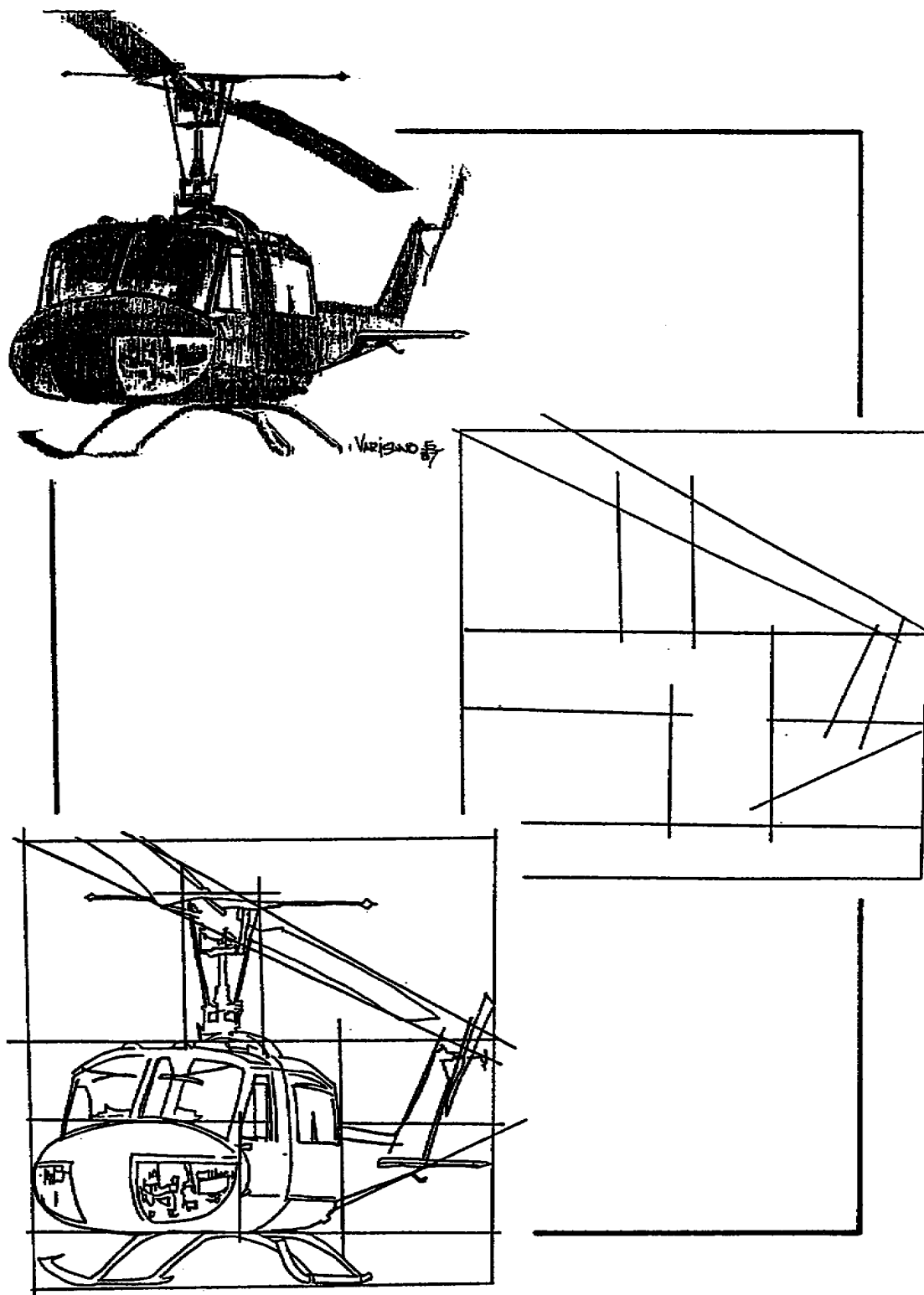


Figure 2-14. Using the rectangle method

(1) From a consistent spot, hold the plumb (pencil) in your hand. Lock your elbow. Tilt the plumb neither forward nor backward, and keep the point up.

(a) For measuring, look at the subject with only one eye and place the tip of the plumb at one end of an object. Move your thumb until it reaches the object's other end. Compare this proportional measurement to other proportional measurements within the subject. You have now taken a proportional measurement of objects within the subject.

(b) Transfer this proportional measurement to the drawing surface. Continue until contents of the subject rectangle are complete. Repeat this process for the most important objects in the subject rectangle. Next, break it down into its angles.

(2) There are two ways to draw and measure angles. The first is to tilt the plumb to the left or right, matching the angle you see and reproducing it visually on the drawing. The second way requires you to measure two coordinates: height and width (fig 2-15).

(3) Once you have transferred the object rectangles and angles to the drawing surface, lightly sketch in the line work. Again, erase excess lines as the final step.

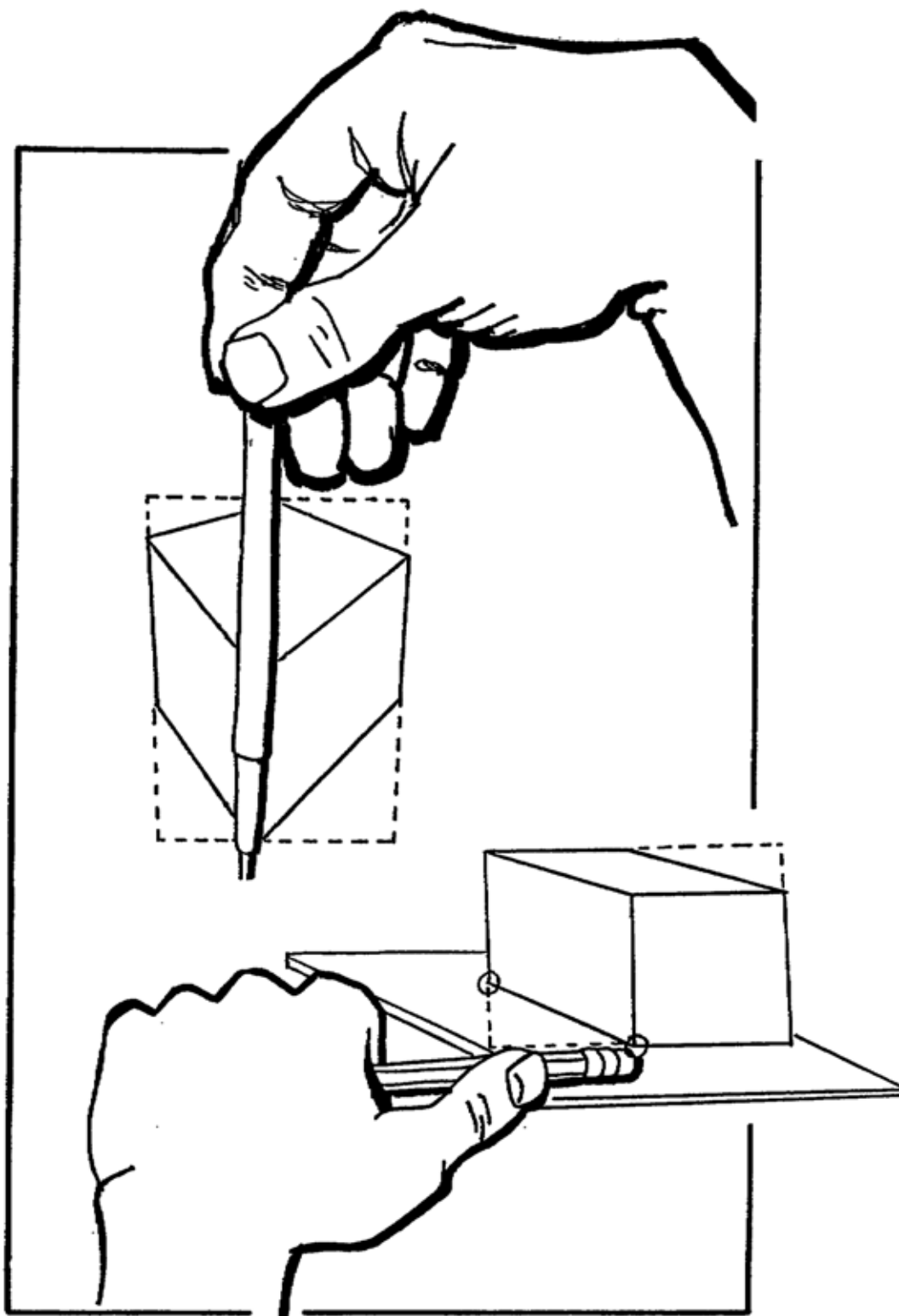


Figure 2-15. Using the plumb

#### Learning Event 4: DEFINE CONTOUR

1. The third step of the systematic approach is contour. Contours are all visible edges seen around and within a form. Edges are the places where forms meet or change direction. Learn to see these edges and draw them accurately. You can accomplish this through a series of exercises explained in this learning event.

2. The lines you drew in the previous learning events were schematic or symbolic lines. They were accurate in form and proportion, but lacked the subtle contour variations you need to draw realistically (fig 2-16). You must understand artistic terms of looking and seeing. Seeing abstractly is a way of viewing an object as a series of unrecognizable shapes or edges. Seeing this way helps prevent symbols from interfering with what is actually there. There are five qualities of abstract line: length, direction, angle, weight, and quality.

a. All lines have length. When you draw a line, you must show how long it is in relation to other lines on the subject. This is determined in steps one and two of the basic procedure.

b. Direction of a line is either straight or curved. Direction refers to the dominant direction.

c. Angle refers to where the line points relative to the subject. Angles are either horizontal, vertical, or diagonal. Again, determine correct line angle in steps one and two of the systematic approach.

d. Weight is the thickness of the line. The thickness is called "line weight." A line may vary from thick to thin, or it may be one uniform thickness.

e. Quality of line (line quality) shows the subtle variations found within the line's length (fig 2-16).

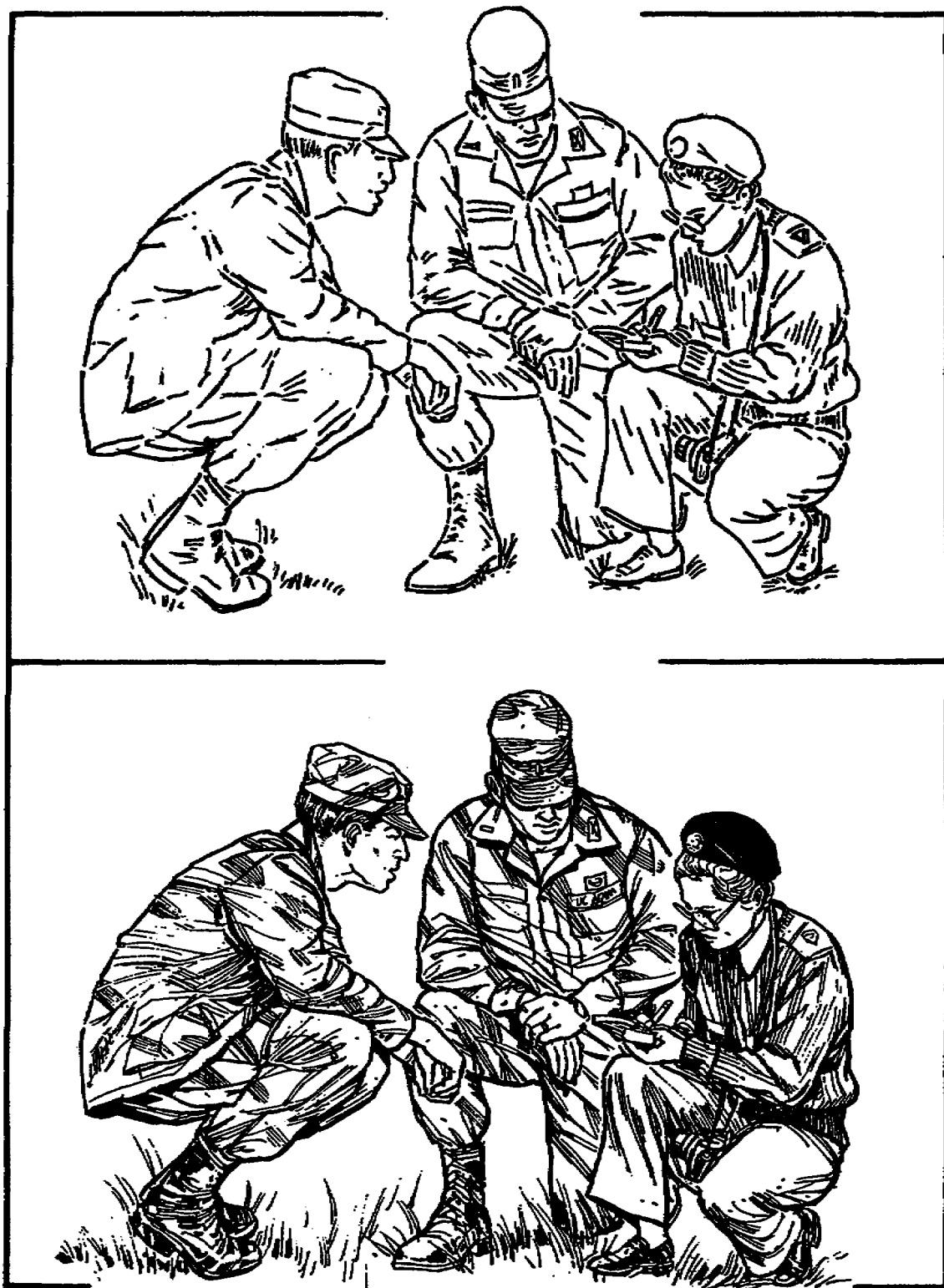


Figure 2-16. Comparison of schematic and abstract lines in drawings

3. You can rework the schematic lines you drew in the previous learning events for visual accuracy. These schematic lines are the right length, direction, and angle. Add line weight and line quality (the small variations in the thickness and direction of a line). This is done by seeing abstractly, and practicing.

4. Now go into contour exercises. The first is positive/negative space, the second is blind/modified contour.

a. Positive space is that taken by the object you wish to draw. Negative space is the area surrounding the object. The study of positive and negative space will enable you to better see the shape you are drawing. For this exercise, use drawing 3 (app A-6). On tracing paper, trace the image and draw a subject rectangle around the subject in the illustration. Concentrate on the negative space. Now shade in the area of negative space that touches the object. This completes a negative space drawing. Notice how the object appears even though you did not draw the object itself (fig 2-17). Add appropriate contours as needed. Without contours to further define the subject, you only have a silhouette.

b. Use blind/modified contour drawings to concentrate on the details along the edges of a form. Contour drawings will help improve eye-hand coordination. Make a blind contour drawing by looking at the subject only, and not the drawing until you are finished. An explanation follows.

(1) For a blind contour drawing, pose the nondrawing hand, palm up, in a semiflexed but relaxed position (fig 2-18). Start at any point along the edge of the hand. Do this as if you were drawing the hand with your eyes. Simultaneously, draw the contours that your eyes are following. Make sure the drawing surface is not within the field of vision. This drawing should be done slowly; spend at least seven minutes on it. Remember, don't look at the drawing surface until the "blind" contour drawing is completed.

(2) A modified contour drawing follows basically the same approach as blind contour drawing. The difference is - a modified contour drawing allows you to glance at the drawing's progress every 15 seconds or so.

c. You shouldn't be concerned if the drawings don't look exactly like your hand. Correct proportion is not necessary in contour drawing. Its goal is to help develop eye-hand coordination and make you more aware of the subtleties of contour. Practice and repetition will be the most help with attaining accuracy.

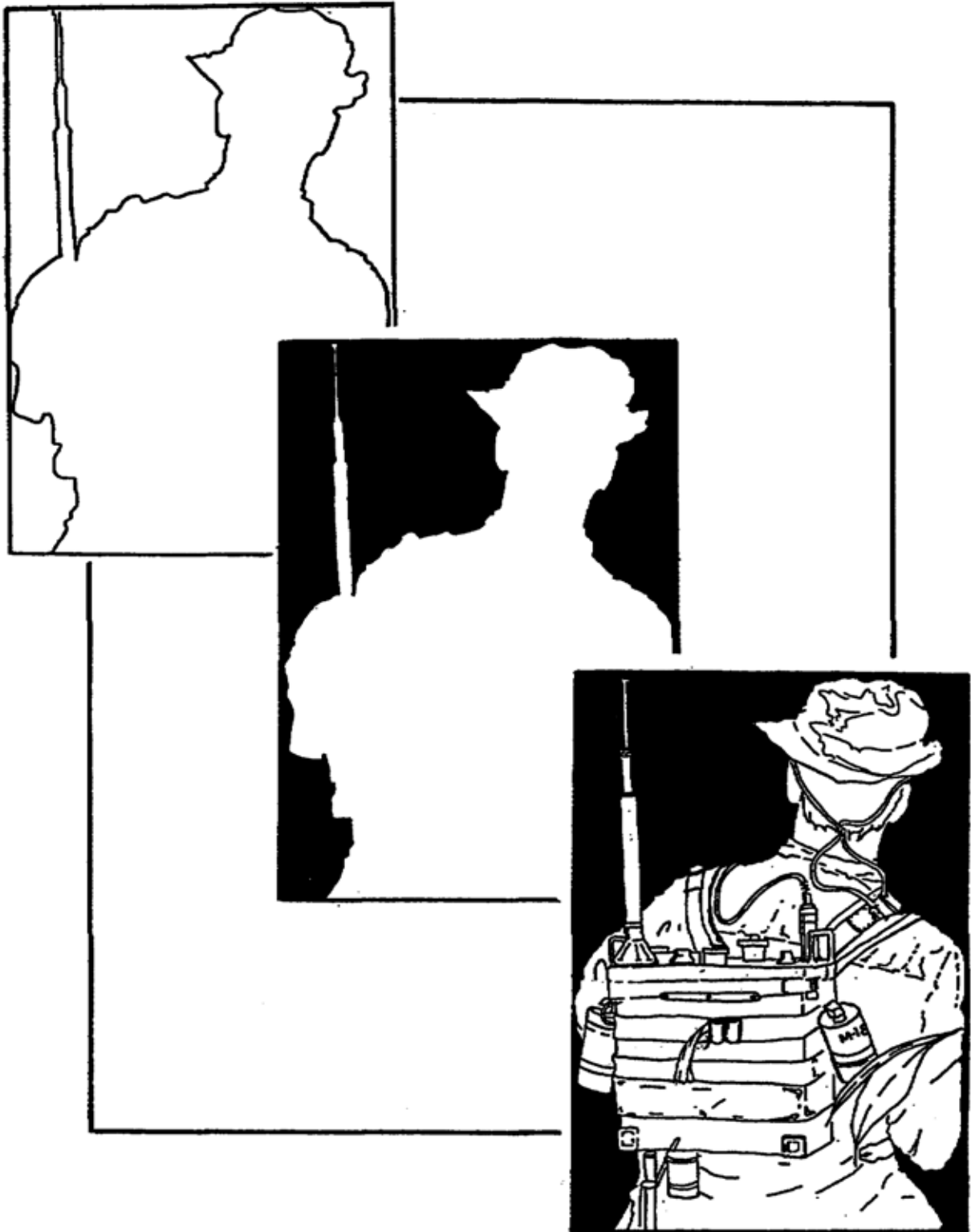


Figure 2-17. Positive/negative space

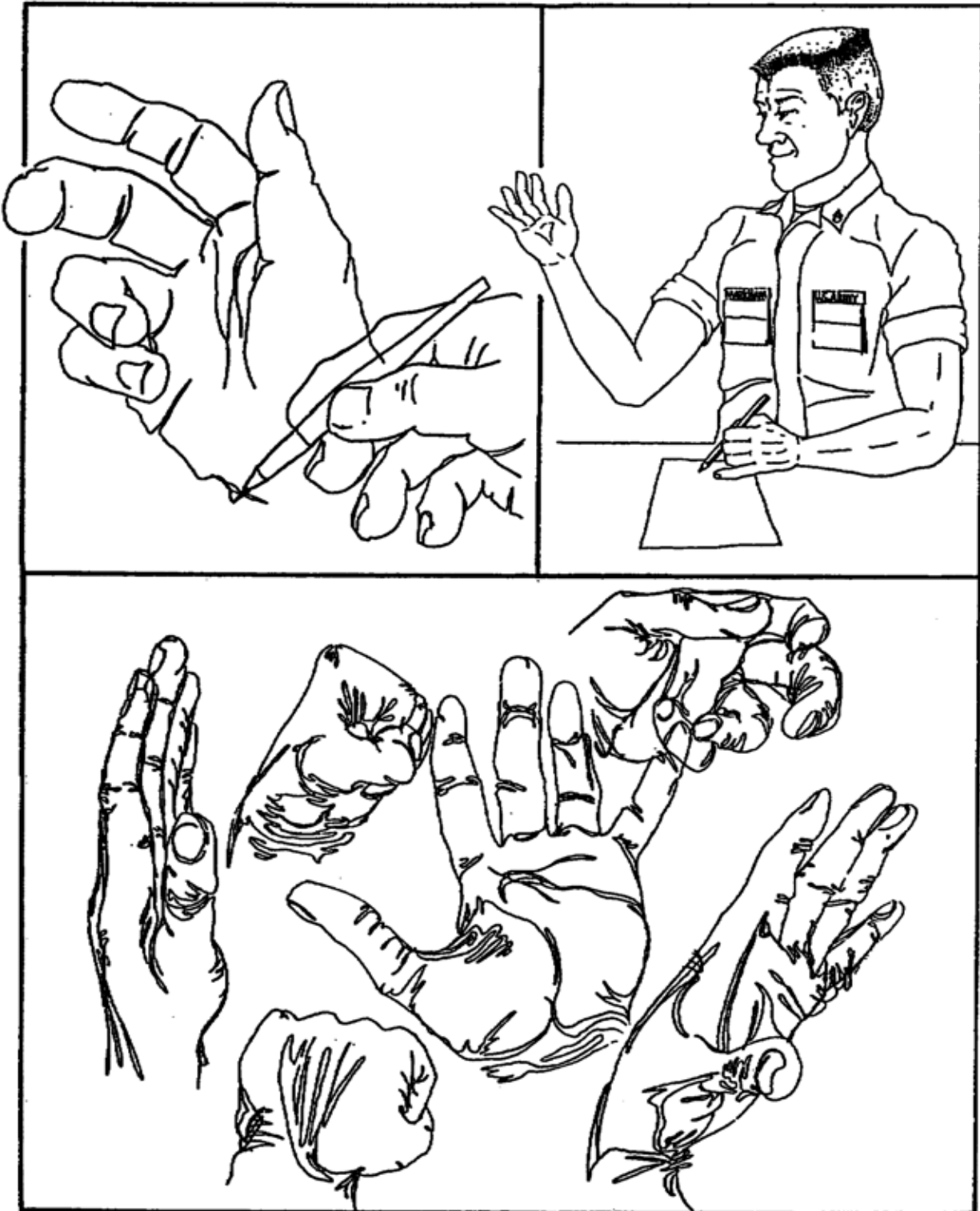


Figure 2-18. Contour drawings



5. The drawing is now correct in form, proportion, and contour. It also has many corrections and smudges. Rather than start over, trace the good portions and transfer the contours to another sheet of paper. This will save much time and aggravation, and the drawing will look much more professional.

#### Learning Event 5: DEFINE SHADING

The last step of the systematic approach is shading. Shading is the pattern of light and dark found on a form. This shading step does the most to create and emphasize the illusion of depth in your illustrations. Shading has two qualities, value and contrast (fig 2-19).

a. Value is the artist's word for lightness and darkness. Learn the two types of value: local value and value patterns.

(1) Local value is the natural lightness or darkness of an object, irrespective of the lighting situation. For example, a white shirt and black trousers have different local value. Additionally, each has its own value patterns.

(2) Value patterns are the shape variations in the natural lightness or darkness of an object because of reflected light. For instance, a cube has three visible sides. If all visible sides reflect the same amount of light, it looks like a flat hexagon. However, the more direct a side is to the light source, the lighter that side looks. The farther away it is, the darker it looks. The tone variations on hard-edged, rectilinear forms have distinctive shapes or value patterns and are simpler to recognize and draw. Value patterns on curvilinear forms such as a tree, an animal, or clothing folds are much more gradual and tonal change is much more complex. An intense light source increases contrast in value patterns. Natural light (the sun) and artificial light (bulb or fluorescent) make the subject appear different (fig 2-19).

(3) Some edges are definite, others indicate a gradual value change. The value patterns on some subjects may at first seem impossible to duplicate, but through practice, they will become "old hat."

b. Contrast is the degree of difference in lightness or darkness between one value and another. Most beginning artists don't emphasize contrast enough in their drawings. Too little contrast will make the illustration appear flat. Illustrations,

photos, or paintings with little difference in values are low contrast. Items with much more difference are high contrast. Higher contrast will emphasize the illusion of depth or three-dimensionality in the work.

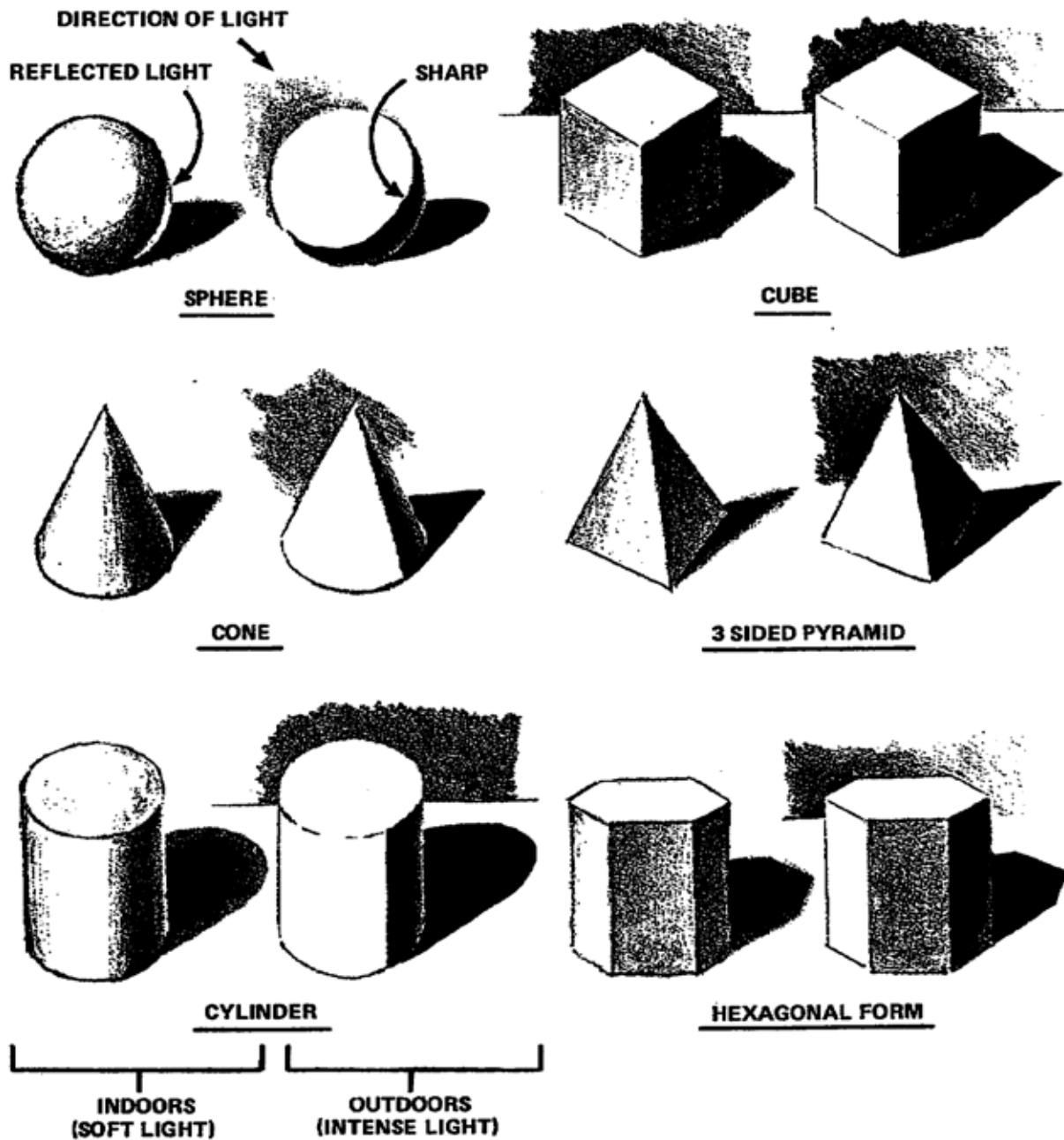


Figure 2-19. Effect of different light on various forms  
(Note reflected light and occurrence of soft shadows)

(1) The term "key" refers to the overall lightness or darkness of a photo or illustration. Images containing light values are "high key." Images containing intermediate grays are "middle key" and those with mostly dark values are "low key." Images containing many values from black to white are "full key" (fig 2-20).

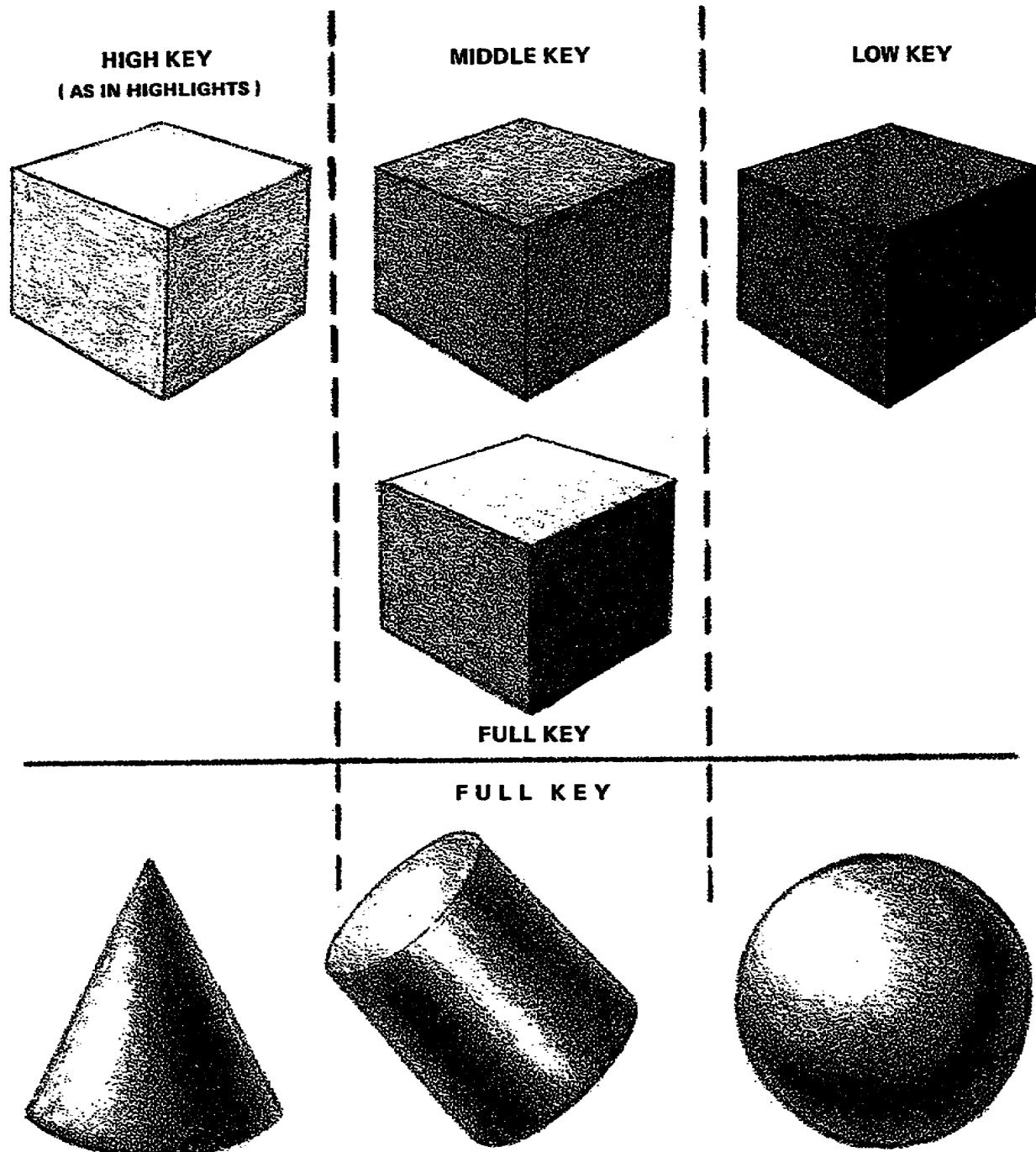


Figure 2-20. Value differences

(2) When drawing from photographs, choose high contrast, black-and-white photographs as subject matter. Anything else has differences too subtle for the beginning artist to distinguish and match. Stay away from color photos initially. It is much more difficult transposing color to black, white, and grey.

(3) When drawing from life, pay close attention to your light source, intensity, and its affect on your subject. If you are drawing outside, you must draw quickly. Limit yourself to two hours on your subject. The time limit is due to the movement of the sun; great changes occur in shade, shadow, and value patterns for more than a two-hour period. If it takes longer than that to draw your subject, come back on successive days at the same time until you complete the drawing. If you must, take a Polaroid picture for a reference in case you cannot return to the location or the subject changes.

## LESSON 2/LEARNING EVENT 6

### Learning Event 6:

#### EXERCISE VISUAL VALUE SCALE

Use the formats on Appendix, page A-7 for this exercise. Your completed project should look as below (fig 2-21). Leave the first square white, while making the last as black as the pencil will allow. Using a number 2B pencil, shade the remaining blocks in even graduations, pressing from light to dark. Each block should be one solid tone, each darker than the previous one.

Shading can be achieved in many ways. For this exercise, use pencil to create even tone variations within an area. To check the tonal differences, squint while looking at your work. Squinting will assist you in seeing the tonal differences. Repeat this exercise using other media and techniques as covered in the next lesson.

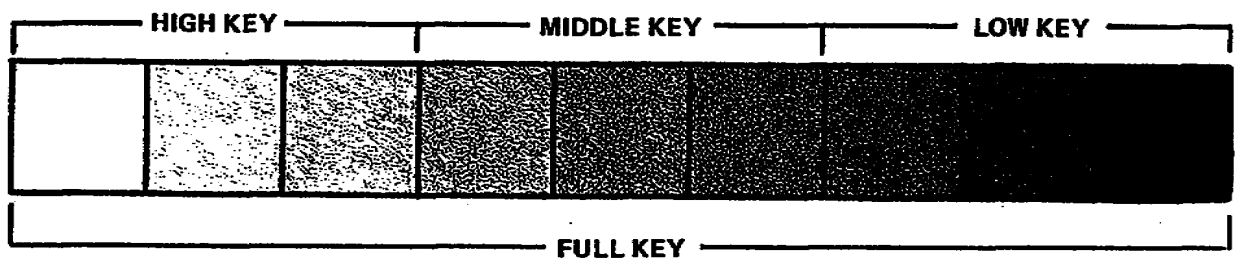


Figure 2-21. Visual value scale

## LESSON 2

### PRACTICE EXERCISE

#### (PERFORMANCE-ORIENTED)

**TASK:** Identify and define the principles of realistic drawing and their interrelationships.

**CONDITIONS:** Given information and examples of the principles of realistic drawing.

**STANDARDS:** Correctly responding to 75 percent or more of the multiple-choice test items covering principles of realistic drawing.

**INSTRUCTIONS:**

In each of the following questions, **SELECT** the one answer which **BEST** completes the statement or answers the question. Indicate your response by circling the correct letter below.

To meet the 75 percent criteria, you must correctly answer 6 of the 8 questions in this practice exercise.

1. Which are the principles of drawing?
  - a. Visual accuracy, systematic approach, and practice
  - b. Value patterns, shading, and visual pacifism
  - c. Blind contour, adaptability of basic form
  - d. Form, proportion, depth, and structure
2. Which shows the correct order of steps you must use in the systematic approach?
  - a. Form, proportion, shading, and contour
  - b. Form, proportion, contour, and shading
  - c. Shading, contour, form, and proportion
  - d. Proportion, shading, form, and contour

3. Which step of the systematic approach allows you to achieve the illusion of depth?
  - a. First and third
  - b. Second and fifth
  - c. Only the fourth
  - d. Every step
4. The relative size and location of one form to another defines which step of the systematic approach?
  - a. Form
  - b. Shading
  - c. Contour
  - d. Proportion
5. What have you achieved when you can draw what is actually there?
  - a. Passive acuity
  - b. Visual accuracy
  - c. Visual passivity
  - d. Accurate reality
6. How do weight, length, direction, and quality relate to drawing?
  - a. Qualities of line
  - b. Patterns of value
  - c. Principles of form
  - d. Techniques of contour

7. What do you call the difference between light and dark?
- a. Key
  - b. Shade
  - c. Contrast
  - d. Tone
8. Which step of the systematic approach most emphasizes the illusion of depth on a form (contour, form, shading, or proportion) ?
- a. Form
  - b. Proportion
  - c. Contour
  - d. Shading

## LESSON 3/LEARNING EVENT 1

### LESSON 3 MEDIA AND TECHNIQUES

#### TASK

Describe various media and their parts, and techniques for using those media.

#### CONDITIONS

Given information and examples on various media and techniques.

#### STANDARDS

Demonstrate competency of the task skills and knowledge by correctly responding to 75 percent or more of the multiple-choice test covering media and techniques.

#### REFERENCES

STP 11-25Q13-SM-TG  
NAVEDTRA 10742

#### Learning Event 1: DEFINE MEDIA

1. Media are the materials used to make an image. Once you understand the systematic approach, you must be aware of the various media available enabling you to create an image. You must also develop the skills to use those tools. Media (singular medium) have two main groups: line media and tone media.

a. Line media includes the materials which produce a black and white image, such as ink on paper. Line media uses no greys or tones. Use line media to make reproducible or camera-ready art. Some line media are pen and ink, brush and ink, and black magic markers. You can create a variety of effects using pen or brush and ink. Use this media to make line art for reproduction.

There are two types of ink: writing ink and drawing ink. Writing ink is relatively thin and transparent whereas drawing ink is much more opaque. Drawing ink is a must for illustrations or they may show streaks or spots.



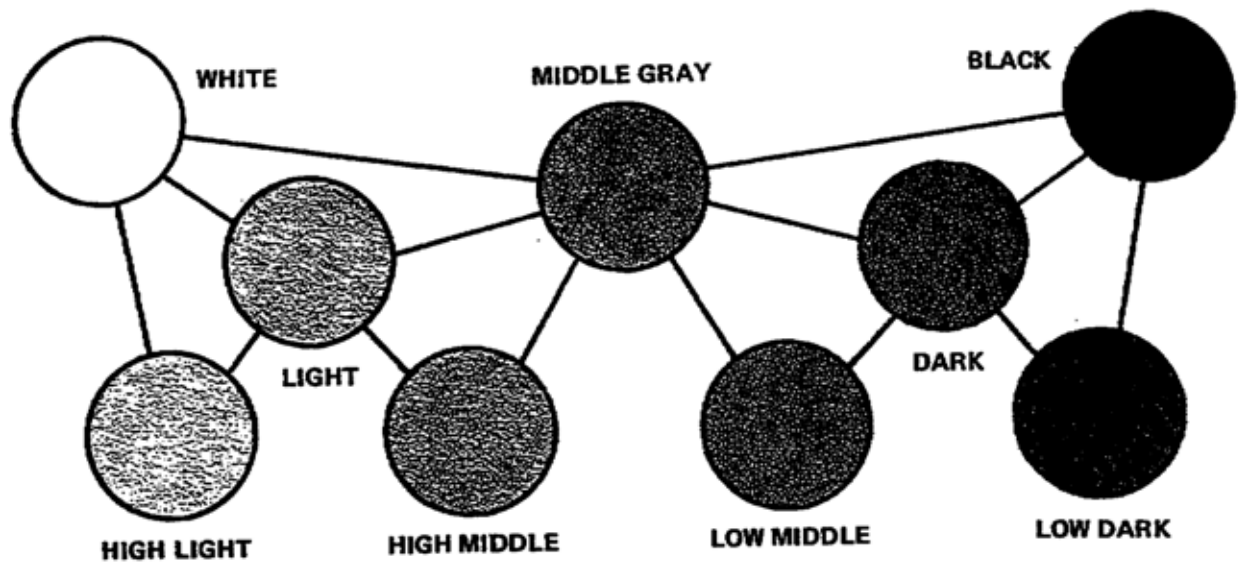


Figure 3-1. Tone chart

b. Tone media comprises any materials used to produce an image containing black, white, and intermediate shades of gray (fig 3-1). Tone media also includes color media. Tone media are classified as dry, wash, and opaque media.

(1) Dry media is any media which leaves a granular deposit on the drawing surface. Dry media includes pencil, chalk, charcoal, or pastel. Dry media is the most popular drawing media because of its ease of use and correctability. Also, it is easy to achieve gradual tonal changes by appropriate pressure, smudging, or blending (figs 3-2A and 3-2B). It is used extensively for portraiture, where the same general principles of drawing apply. Practice will help you master the subtleties of the craft.

(2) Wash media is any media which is fluid and transparent, e.g., inks and watercolors. The term "wash" refers to the appearance of the media on the surface the artist is working, not necessarily to a particular medium.

(a) Wash usually refers to thinned ink or watercolor. The more fluid the medium, the more transparent it will be (fig 3-3).

(b) When making a wash, use only the appropriate thinners and grounds.

(3) Opaque media is media which is fluid but NOT transparent. Underlying layers are not visible. The term "opaque" means "blocking out." One cannot see through it.



Figure 3-2A. Examples of dry media portraiture



Figure 3-2B. Example of screened pencil illustration to preserve tone



Figure 3-3. Example of watercolor portraiture

(a) Medium opacity is determined by the pigment content. The more pigment in the medium, the more opaque it will be. Examples of opaque paints are tempera, gouache, and acrylic.

(b) Though acrylic paints are classified as an opaque medium, they may need more than one coat to achieve the opaque effect.

2. Media have differing characteristics and uses due to their element makeup. Those elements are pigment, binder, and vehicle (sometimes called carrier).

a. Pigment is the colored matter which produces the image from the medium. Pigments can be either man-made or a product of nature. Ground pigment is added to the other elements for use.

b. Binder is the glue that holds the elements together. Some binders hold the elements together in sticks (chalk, crayon, pastels), others hold the medium to the image surface.

c. Vehicle (sometimes called the carrier) is the liquid which suspends the pigments and binders.

3. Mixed media is the combination of more than one media in an illustration. Some pleasing combinations are watercolors, tempera paints, or acrylics, with ink contours.

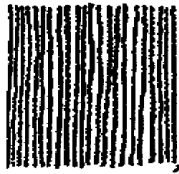
## Learning Event 2

### DEFINE TECHNIQUES

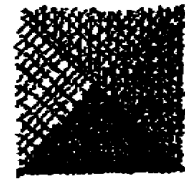
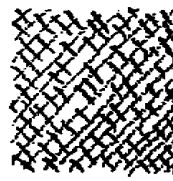
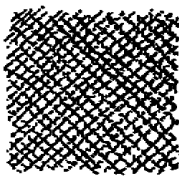
1. Techniques are the way you use or apply various media to the drawing surface. This application creates illusions of edges, depth, movement, and texture.

2. Line techniques create the illusion of tones and shading with black and white only. Line techniques effectively use lines, dots, or circles to create the illusion of tone (fig 3-4).

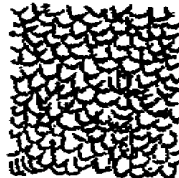
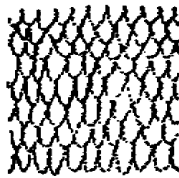
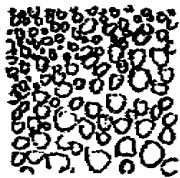
a. Single line technique creates the illusion of value variations through line weight, the number of lines, and their proximity. Single line weight is uniform throughout its length. You can achieve the total range of values using pencil, pen and ink, or brush and ink. Apply single line in one of four methods: mechanical, freehand, form following, and diagonal or repeating pattern (figs 3-5 through 3-8).



**VARIOUS LINE TEXTURES**



**EXAMPLES OF CROSSHATCHING**



**TEXTURES AND TONES WITH A SOFT PENCIL**

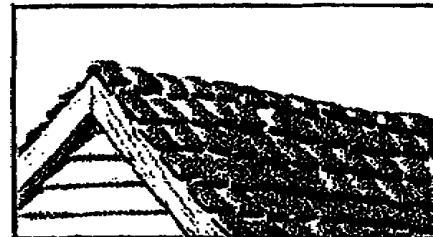


Figure 3-4. Practical application of pencil texture and tones  
(Note: Carpenter's pencil is used for brick and shingle textures)

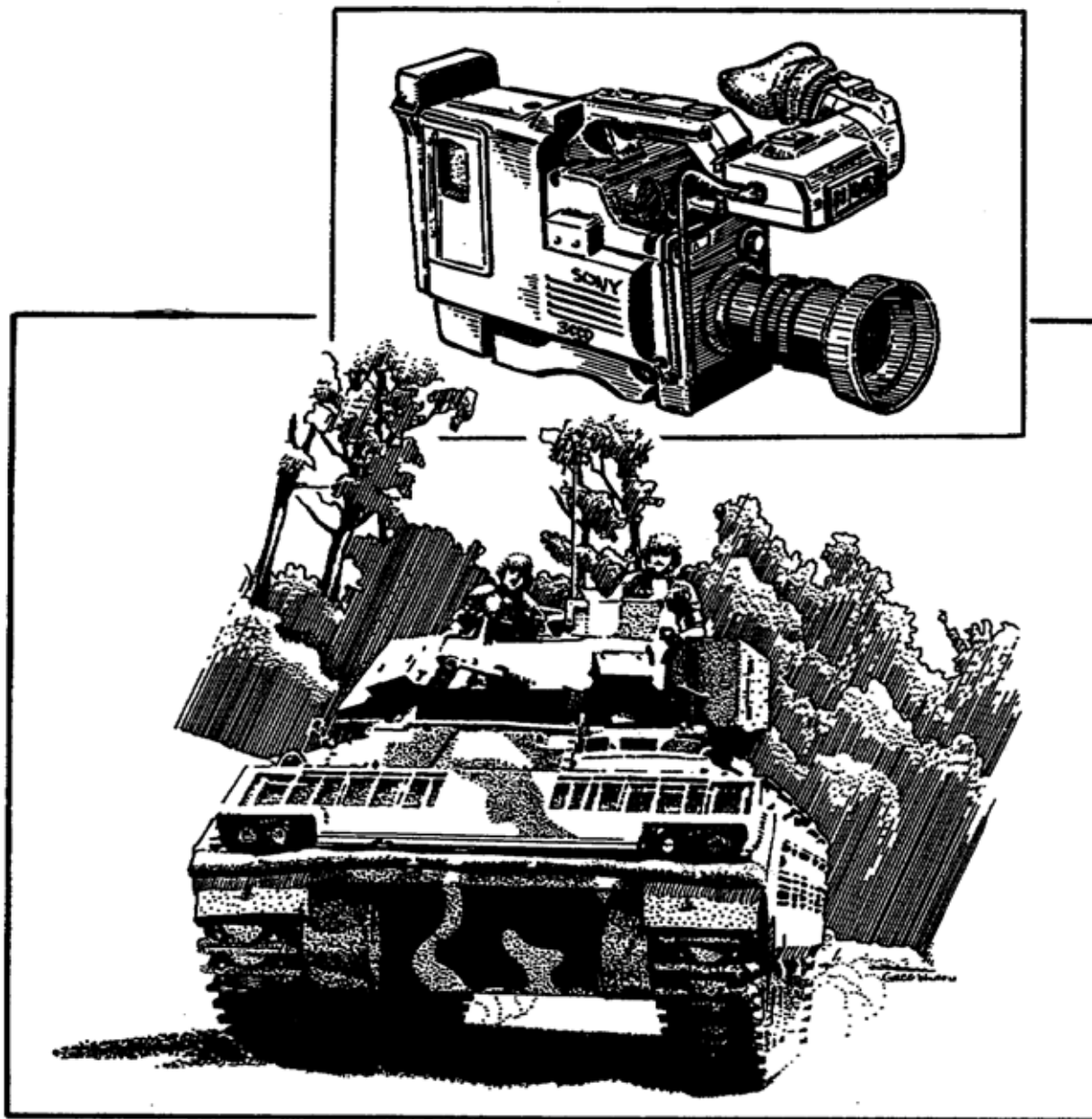


Figure 3-5. Mechanically applied single line technique combined with stipple technique

(1) The mechanical application of single line shading uses a straight edge, triangle, and a technical fountain pen or mechanical pencil (fig 3-5). Because of the consistent, uniform line weight of the pen, you can easily achieve a clean, mechanical, visual effect.

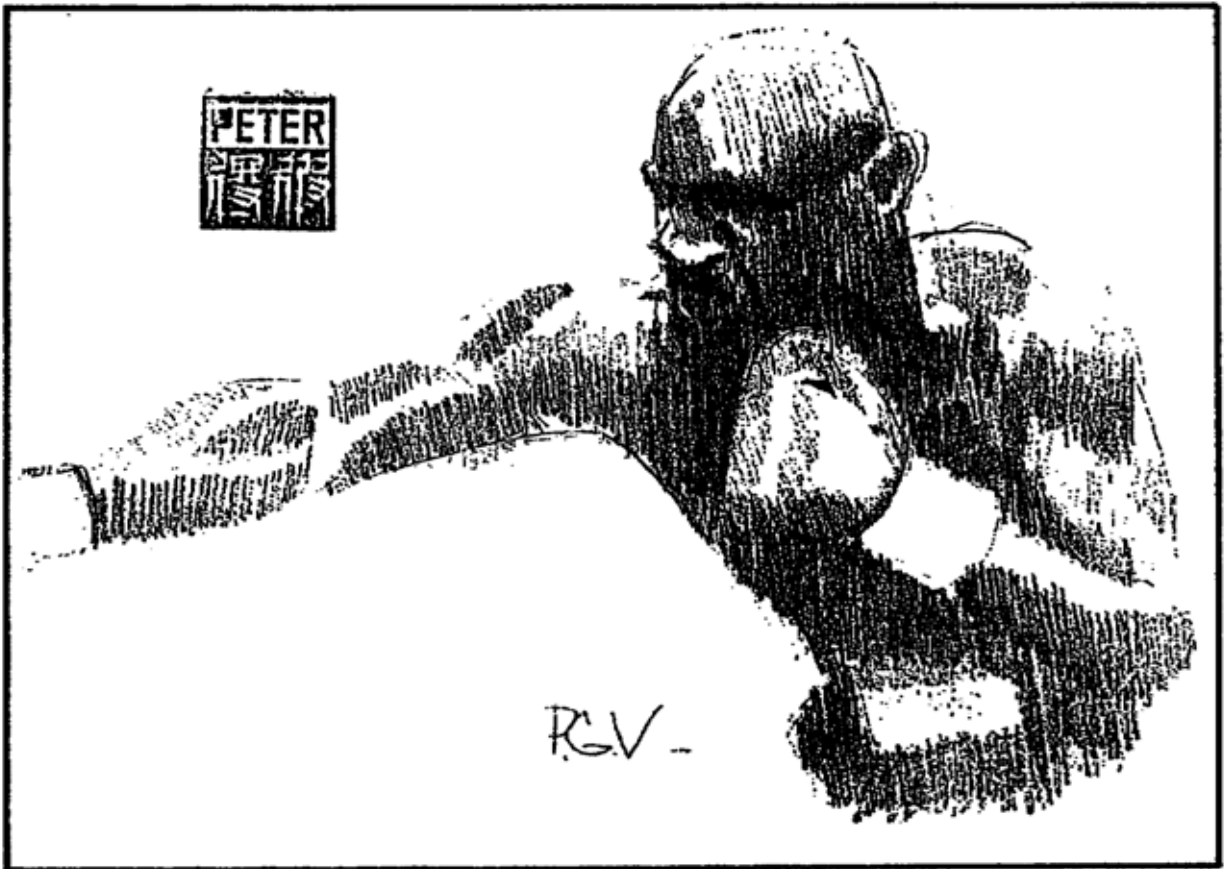


Figure 3-6. The freehand single line application of pencil to a rough-textured paper

(2) The freehand single line approach (fig 3-6) is very expressive and beautiful. The freeness of this approach gives life to the subject matter. Experiment to improve your skills. Tools can be either a pencil, technical fountain pen, or a crow quill pen. The flexibility of the quill pen will allow a variation of thick and thin lineweight throughout the line length.



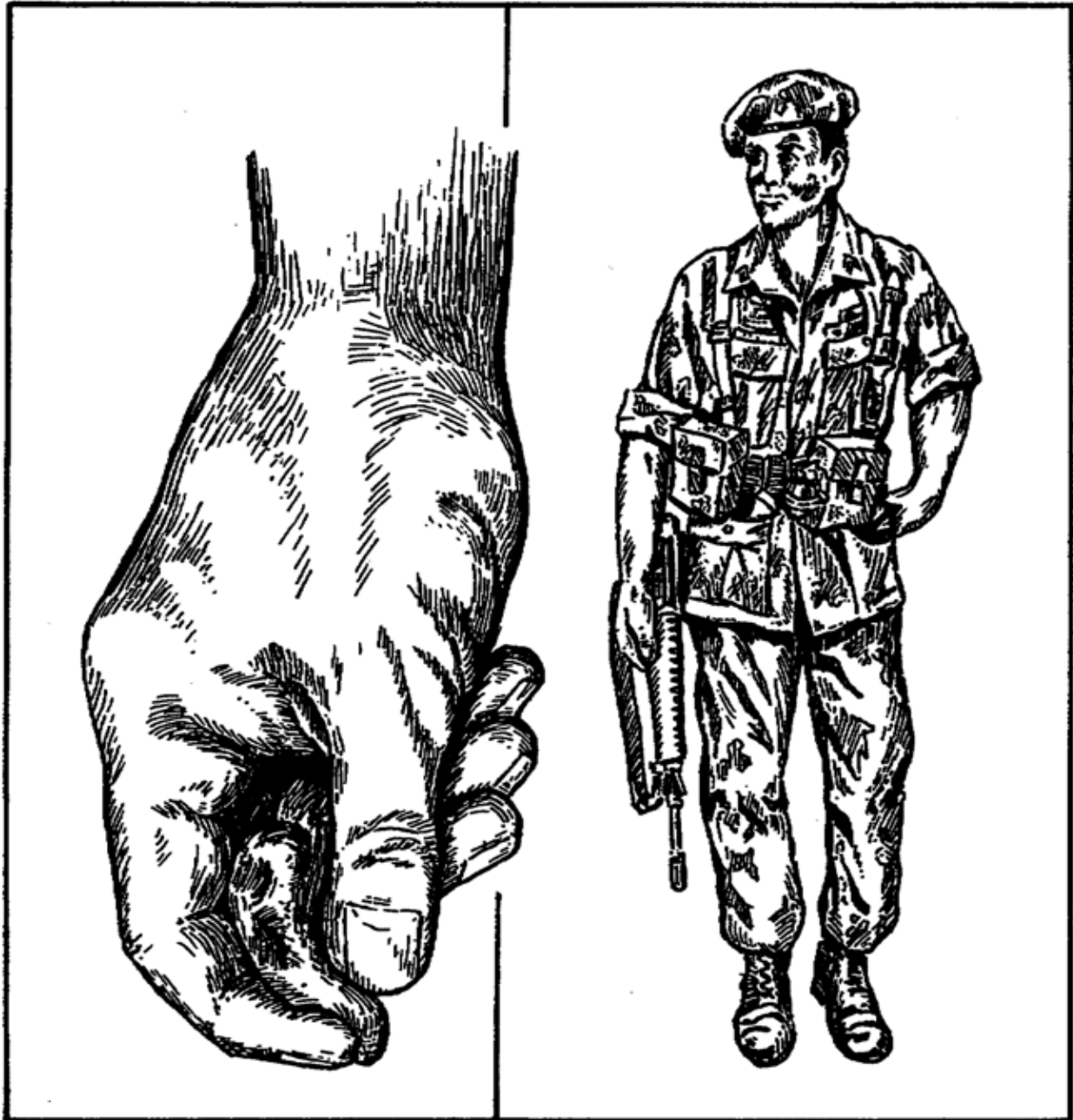


Figure 3-7. The form-following approach

(3) The most difficult single line approach is the form-following approach (fig 3-7). The linear shading follows the form and changes direction with the form. The effect, however, will be worth the effort. It gives a three-dimensional look to the work that other techniques are unable to match. Use any of the above-mentioned tools to render with this technique.

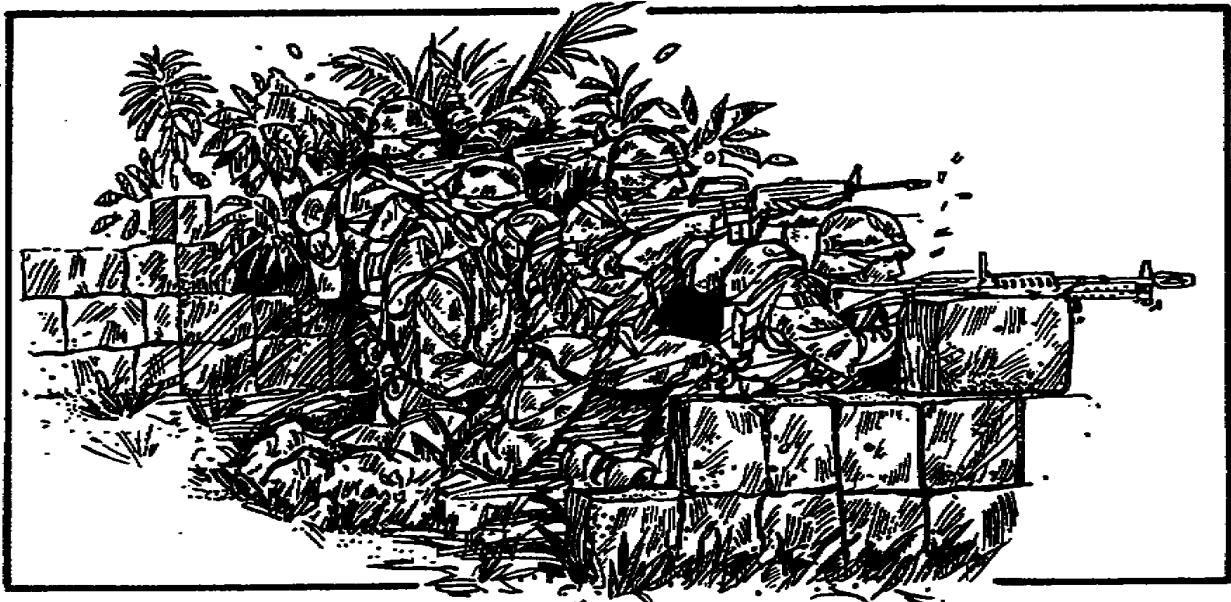


Figure 3-8. Series of short, single line applications

(4) Patterns of a series of short single line applications are a very effective shading technique (fig 3-8). The patterns can be horizontal, vertical, or diagonal, with repeating applications to each. There is no set pattern to follow as long as value is controlled. Simply stated, copy the dark and light areas.

b. Graded line has varied thickness within its length. This variation helps to create the illusion of shade and shadow while creating the illusion of depth. The most well known examples of this technique are comic books and cartoon-style posters.

c. Crosshatch shading technique uses two or more series of overlapping parallel lines. Each cross in different directions. This technique uses the same principles as the single line with each series crossing another to create a darker value area (fig 3-9).

d. Stipple (confused with pointilism) uses a series of irregularly spaced dots (usually ink) that control light and dark (fig 3-10). The closer the dots, the darker your image area. A fine-tipped technical fountain pen (00) is most useful for application of this technique. Application consists of touching the pen to the paper vertically and sporadically. Do not apply stipple on-the-move or dashes will appear instead of dots. Stipple technique is time consuming but pleasing to the eye. Practice will help you refine this technique.

(1) Pointilism is the placing of small dots of pure color juxtaposed (placed next to each other) to cause a visual color mixture. An example is the art of Vincent VanGogh.



Figure 3-9. The crosshatch shading technique

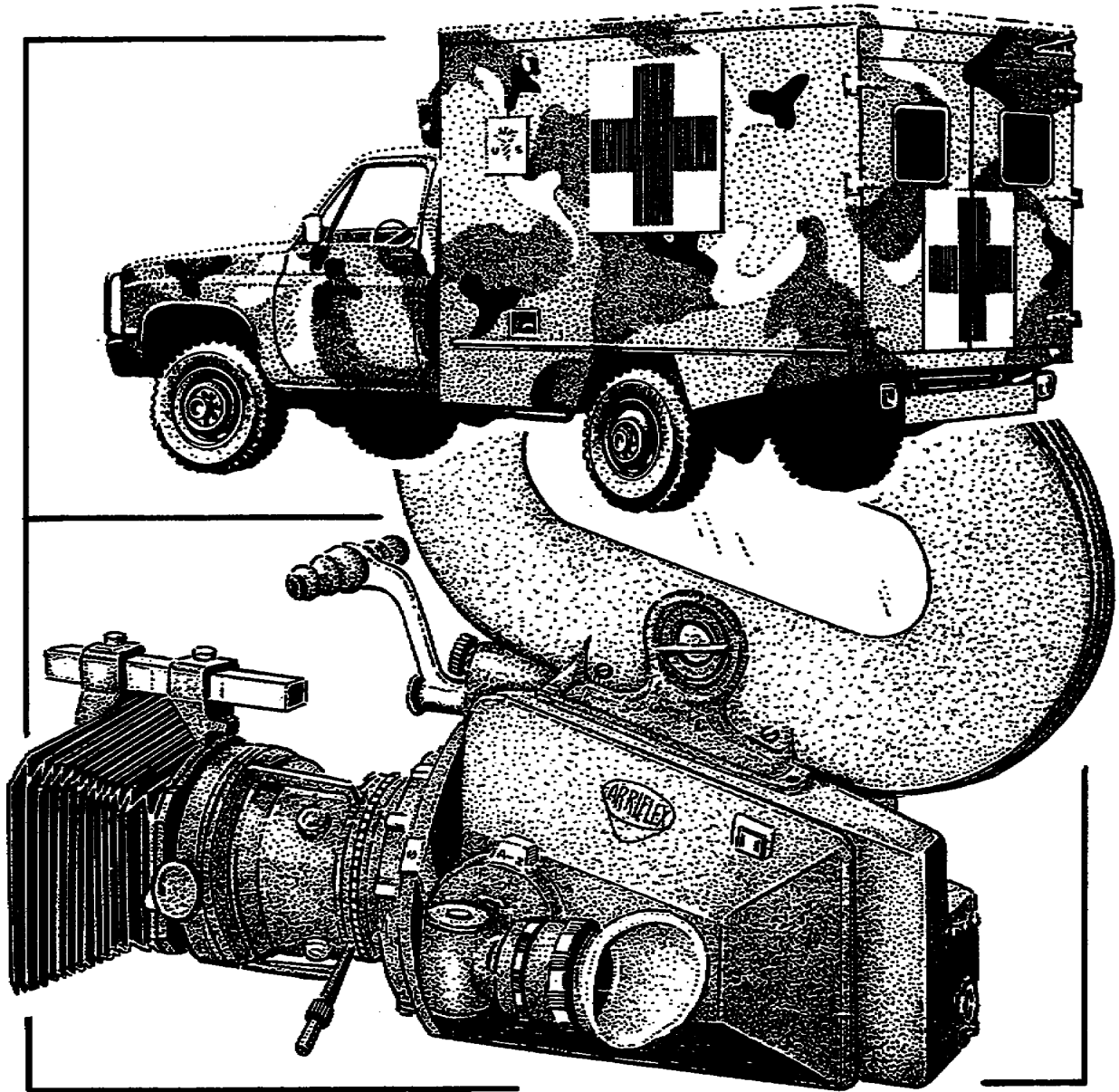


Figure 3-10. The stipple shading technique

e. Dry brush technique applies a liquid medium in an almost dry state. This technique applies many tiny value patterns of pigment to the illustration in a manner resulting in a somewhat rough appearance. This technique is ideal for creating an illusion of texture such as grasses and weathered wood.

Application can be with a standard brush with its hairs spread out, or with a fan brush.

3. Tone media techniques. Tone media can be dry or liquid and must be capable of producing black, white, and shades of gray (including color media)(fig 3-4). The following discusses techniques for using tone media.

a. Dry media techniques - Dry media (pencil, charcoal, pastels, and chalk) involve directly applying the pigment to a surface. Application can be with either the end (tip) or broad side (edge), depending on the medium used. Control the value by the amount of applied pressure (fig 3-11). Adjoining values are feathered or blended to create a graduated tone. Use a smudging tool to smooth tones. These tools can be a stump, tissue, or cotton swab. Don't use your fingers to blend media. Fingers contain body oils that may smudge the drawings. Use a kneaded eraser to bring out highlights.

b. Wash media techniques - Thin wash media (watercolor, ink, and opaque paints) with water, then apply to a heavy absorbent paper. Use a round or flat sable brush to apply washes. The four types of wash are flat wash, graded wash, wet-on-wet, and wet-on-dry. Listed below are techniques for using washes. An appropriately-sized round brush should be used to float-on washes.

(1) A flat wash has one even value once dry.

(a) First, dilute enough medium to cover the entire area for the wash. Then, wet the paper with clear water and allow it to be absorbed until there is no visible moisture.

(b) Load the brush with wash. Starting at the top of the paper, use an even, moderately fast stroke to lay on the wash. Hold the brush nearly flat so most of the hair touches the paper. Float the wash on. Do not rub it in.

(c) Continue with a slight overlap of the previous stroke. Before the brush loses all of its tone, quickly dip it into the wash and continue until all the area has wash.

(d) Finally, with a dried brush, stroke the pool that will form at the bottom of the paper. The brush will soak up some of the excess. Squeeze the brush and repeat as necessary.

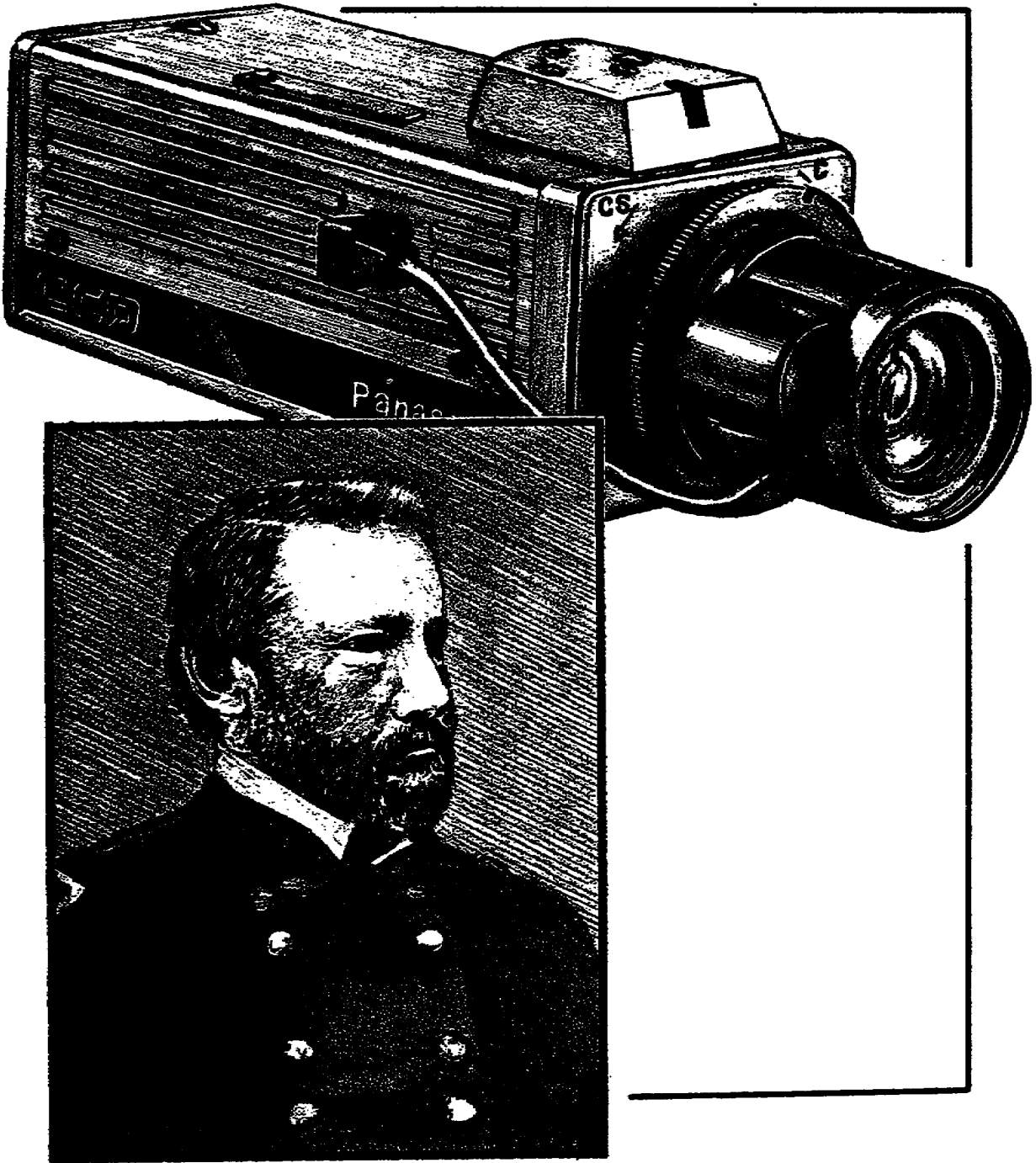


Figure 3-11. Dry media techniques

(2) Graded wash has a gradually changing Value from light to dark within its area. Follow the same procedure as for flat wash but dip the brush into clear water instead of the wash. Do this every stroke or two. This will dilute the wash and graduate it from dark to light. To go from light to dark do the opposite. Start with the clear water and add a little tone after each stroke.

(3) Wet-on-wet is applying a toned wash to an already wet value area. While the area is still wet, apply another toned wash to the area. This second wash will bleed into the first creating a soft irregular edge.

(4) Wet-on-dry is laying a wash on the watercolor paper and then allowing it to dry. Apply a second wash over the first after it is dry. This technique will allow build-up of the tone's value and create sharper edges between different tones or values. For a very sharp edge, lay masking tape or a masking medium over the area not receiving the wash. Once all is dry, pick up the tape or masking medium, and the protected area without wash remains the same value.

c. Opaque media techniques - Opaque media are those paints, discussed previously, which you cannot see through. They include tempera, gouache, and acrylic. Opaque paints are heavy, stiff, and difficult to blend. It is easy, however, to get a flat area of uniform value. Take the medium directly from the tube and mix it to the proper consistency and shade. Paint over mistakes by simply letting the paint dry, then repainting with the correct tone or another value.

(1) Consistency - Mix the water-based opaque paint with a little water to get the consistency of heavy cream. Don't add too much water or the paint will be runny and no longer transparent. If you don't add enough water, however, the paint will be stiff and difficult to use.

(2) Mixing - Opaque paints come in black and white, and color. They also come in shades of premixed grays, often called retouch grays. Although it is more convenient to use the retouch grays, you may want to mix your own. First mix black and white paint to get a middle gray. Next mix this middle gray with white to get light gray and with black to get dark gray. Continue to mix adjacent values until the desired number of grays are reached.

(3) Blending - To achieve an appearance of a graded tone, paint narrow bands of closely related values side by side.

You may, however, want to blend the colors using either the wet or dry brush method (fig 3-12).

(a) Wet brush - Lay the two values to be blended, side by side. Slightly overlap them on the paper. Wet the brush in a clear carrier and move it back and forth over the two values. The brush will mix the two values together creating an in-between value (fig 3-12).

(b) Dry brush - Paint the two values slightly overlapping the other, creating a definite separating line between them. On the palette, mix a gray tone, half way between the two values. Pick up a small portion of the gray tone with the tip ends of your brush and blend over the middle of the two values (fig 3-13).

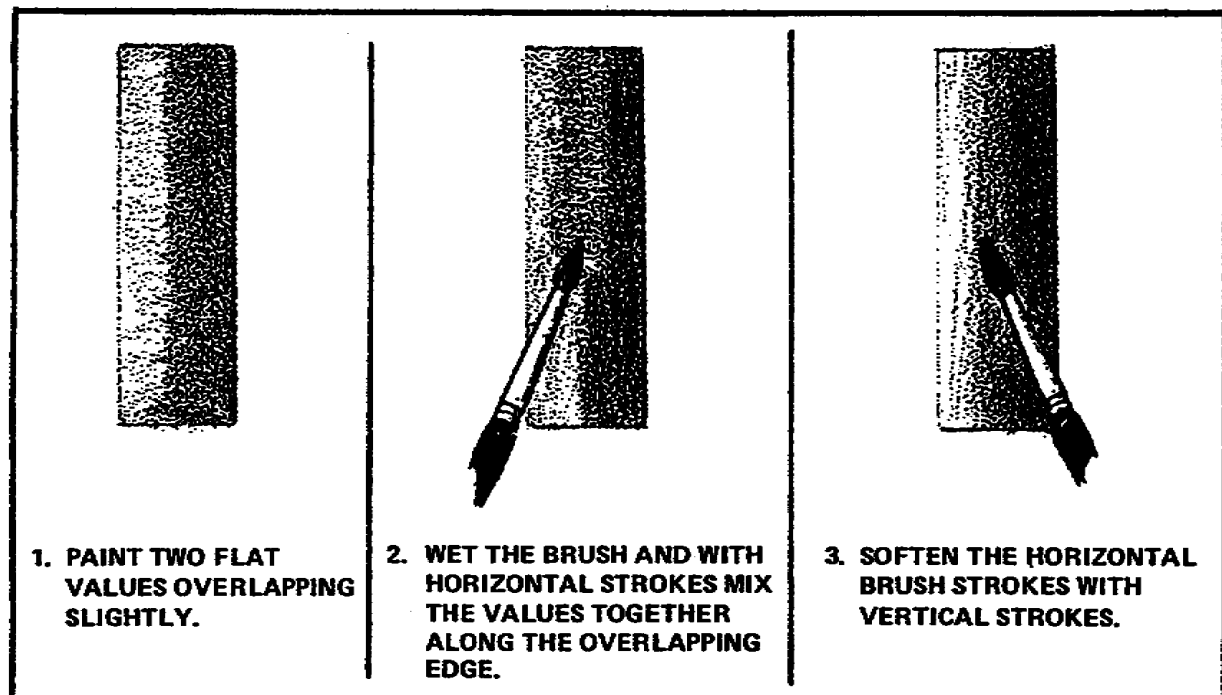


Figure 3-12. Wet brush blending



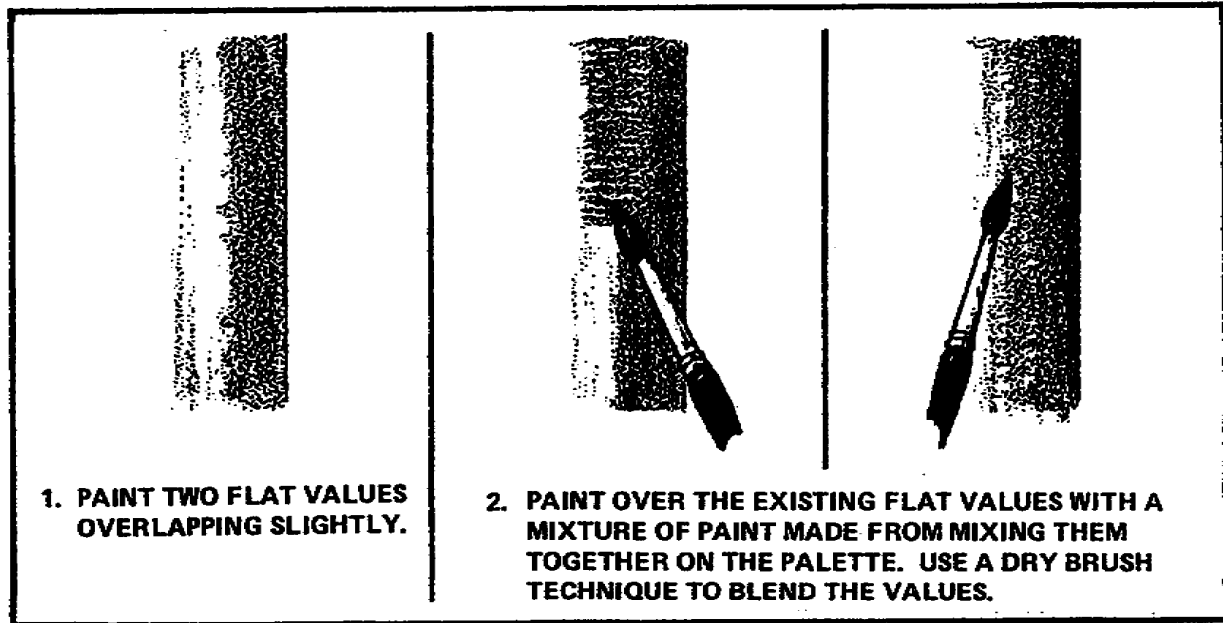


Figure 3-13. Dry brush blending

### LESSON 3

#### PRACTICE EXERCISE

##### (PERFORMANCE-ORIENTED)

**TASK:** Describe various media and their parts, and techniques for using the media.

**CONDITIONS:** Given information and examples on various media and techniques.

**STANDARDS:** Prove knowledge by correctly responding to 75 percent or more of the multiple-choice test covering media and techniques.

**INSTRUCTIONS:**

In each of the following questions, **SELECT** the one answer which best completes the statement or answers the question. Indicate your response by circling the correct letter below.

To meet the 75 percent criteria, you must correctly answer 4 of the 5 questions in this practice exercise.

1. What do you call the materials you use to make an image?
  - a. Techniques
  - b. Media
  - c. Wash
  - d. Stipple
2. Stipple and crosshatch are in which of the following group?
  - a. Wet-on-wet media
  - b. Wash value scale
  - c. Line techniques
  - d. Tone media

3. In paint, what do you call the liquid that suspends the medium?
  - a. Vehicle
  - b. Glue
  - c. Pigment
  - d. Acrylic
4. You need to create an illustration for camera-ready reproduction. Which media is the best choice of use?
  - a. Line art
  - b. Pen and ink
  - c. Water color
  - d. Washes
5. Which tool or medium is recommended in drawing brick or shingle texture in a tone drawing?
  - a. Fan brush
  - b. Shading sheet
  - c. Pen and ink
  - d. Carpenter's pencil



## ANSWERS TO PRACTICE EXERCISES

### (PERFORMANCE-ORIENTED)

#### Answers

#### Reference (Learning Event, paragraph, page)

#### Lesson 1:

- |    |   |  |
|----|---|--|
| 1. | b | LE 1, para 1, pg 1                       |
| 2. | d | LE 1, para 1a, pg 1                      |
| 3. | d | LE 1, para 1a(2)(a), pg 1; fig 1-1, pg 2 |
| 4. | b | LE 1, para 1c, pg 7                      |
| 5. | c | LE 2, para 2, pg 11                      |
| 6. | a | LE 2, para 4, pg 12                      |
| 7. | d | LE 1, para 1i, pg 11                     |
| 8. | d | LE 2, para 3a and 4, pg 12               |

#### Lesson 2:

- |    |   |                      |
|----|---|----------------------|
| 1. | a | LE 1, para 1a, pg 17 |
| 2. | b | LE 1, para 3, pg 20  |
| 3. | d | LE 2, para 5a, pg 24 |
| 4. | d | LE 3, para 1, pg 30  |
| 5. | b | LE 1, para 2, pg 19  |
| 6. | a | LE 4, para 2, pg 37  |
| 7. | c | LE 5, para 1b, pg 42 |
| 8. | d | LE 5, para 1, pg 42  |

## ANSWERS TO PRACTICE EXERCISES

### (PERFORMANCE-ORIENTED)

#### Answers

#### Reference (Learning Event, paragraph, page)

#### Lesson 3:

- |    |   |                      |
|----|---|----------------------|
| 1. | b | LE 1, para 1, pg 49  |
| 2. | c | LE 2, para 1a, pg 59 |
| 3. | a | LE 1, para 2c, pg 54 |
| 4. | a | LE 1, para 1a, pg 49 |
| 5. | d | LE 2, fig 3-4, pg 55 |

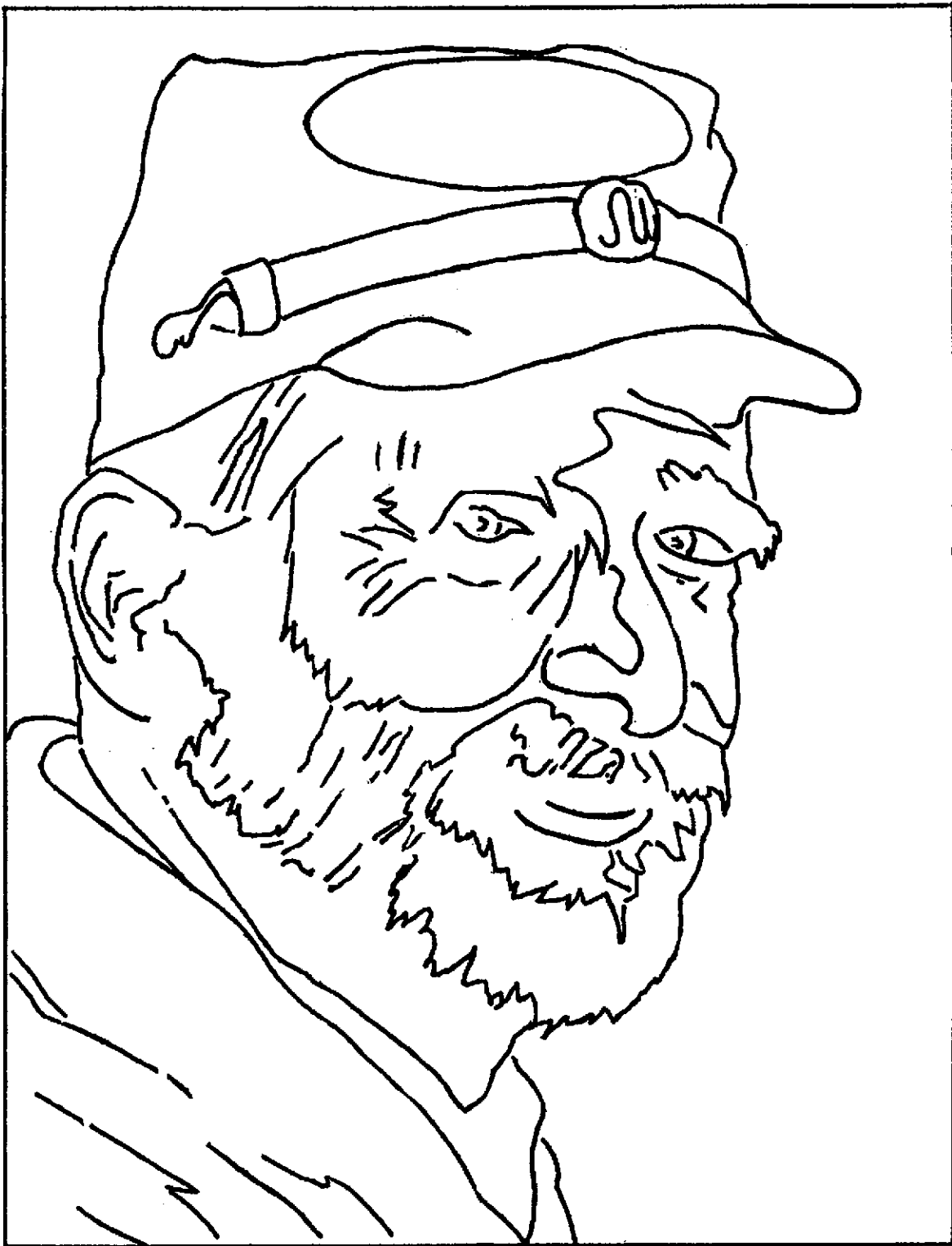
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## APPENDIX

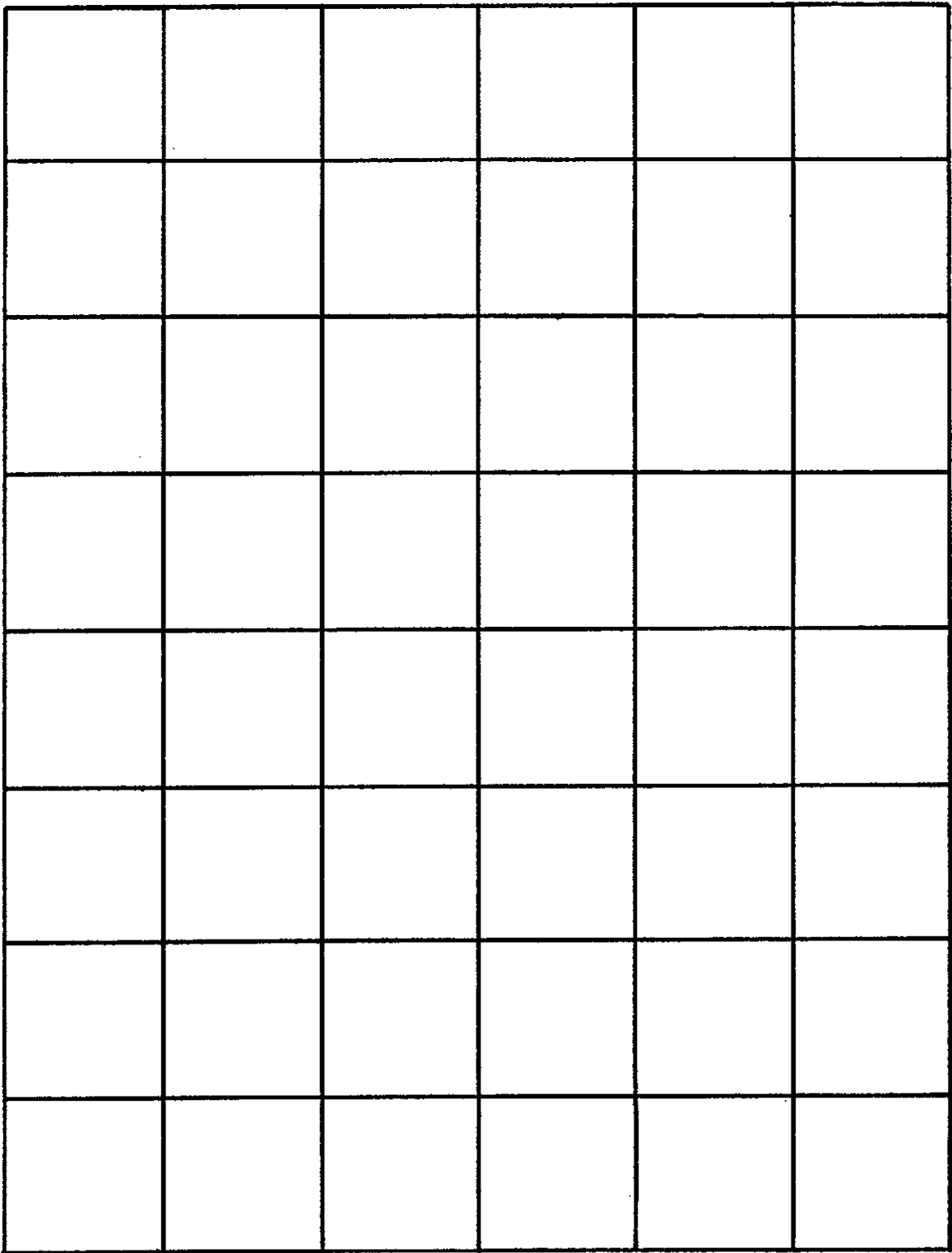
This appendix contains drawings and aids to be used for practice exercises as listed within the subcourse. Once a drawing is completed, it can be evaluated by your NCOIC, supervisor, or a qualified graphics person. The following is a list of the drawings and aids.

<u>Description</u>	<u>Page</u>
Appendix I contents page	A-1
Drawing 1	A-2
1-inch Grid (Xerox on clear acetate)	A-3
1/2-inch Grid (Xerox on clear acetate)	A-4
Drawing 2	A-5
Drawing 3	A-6
Blocks for visual value scale	A-7

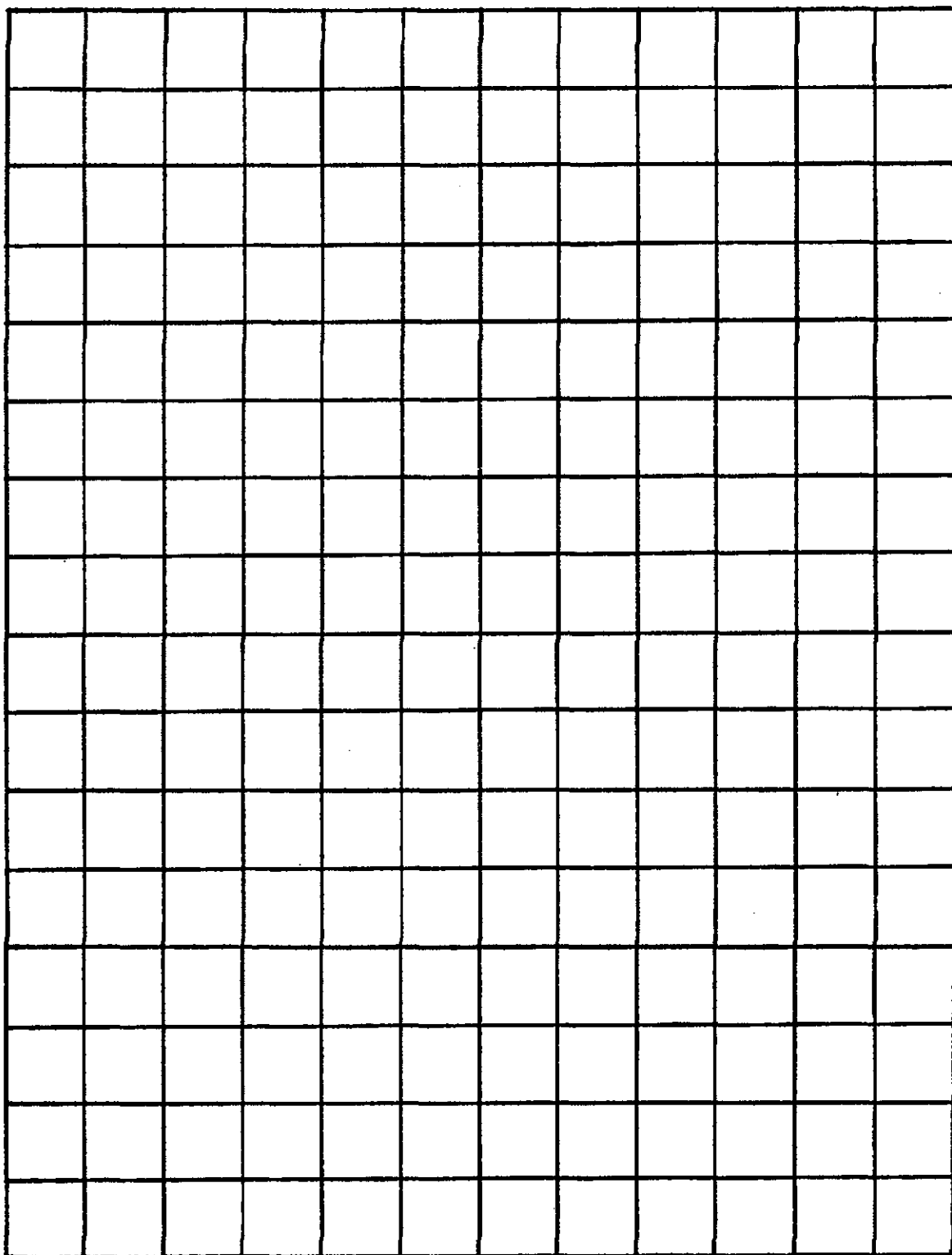




Drawing 1



1-inch grid (Xerox on clear acetate)

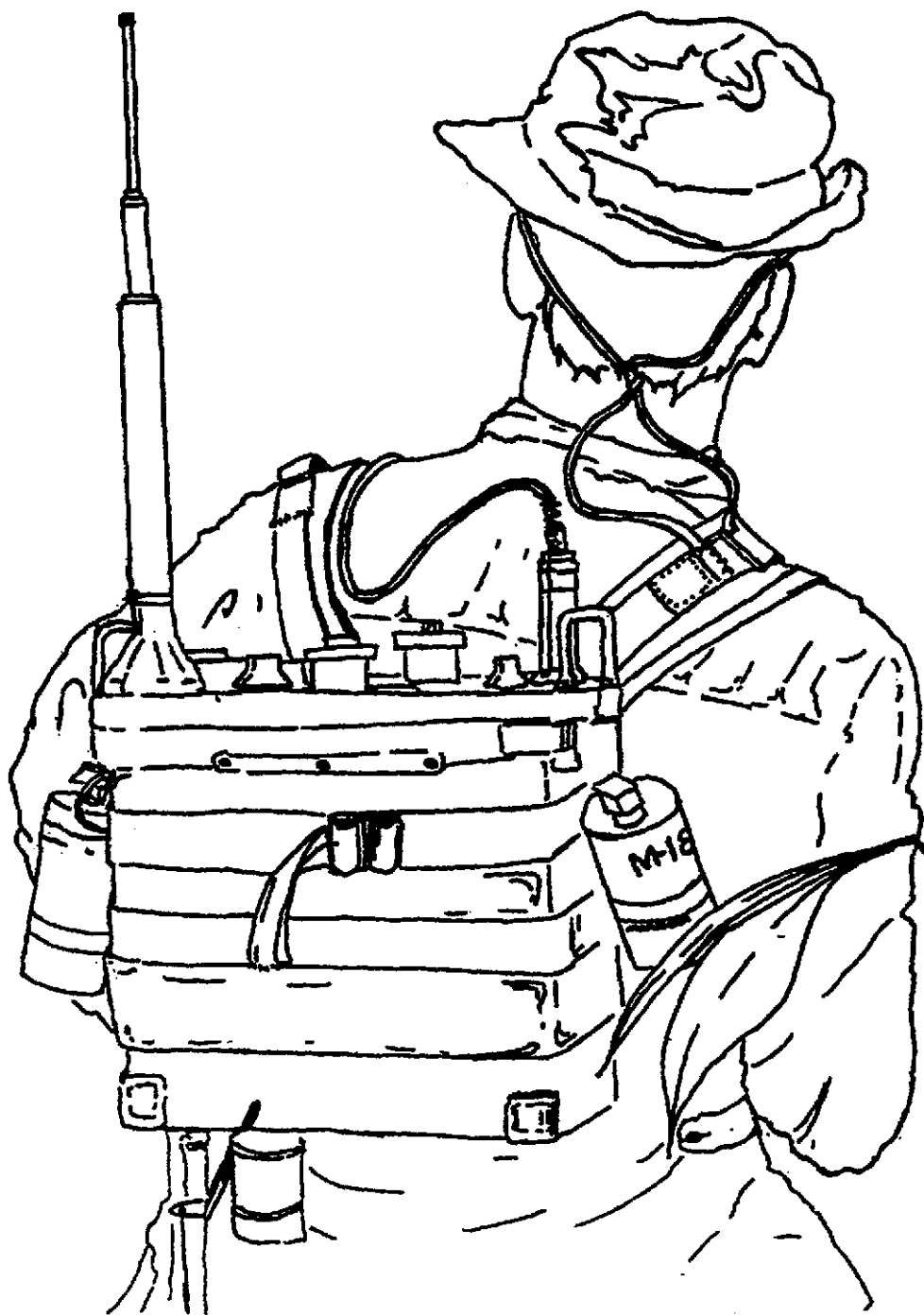


1/2-inch grid (Xerox on clear acetate)



Drawing 2

A-5



Drawing 3

WHITE				
BLACK				

Blocks for visual value scale