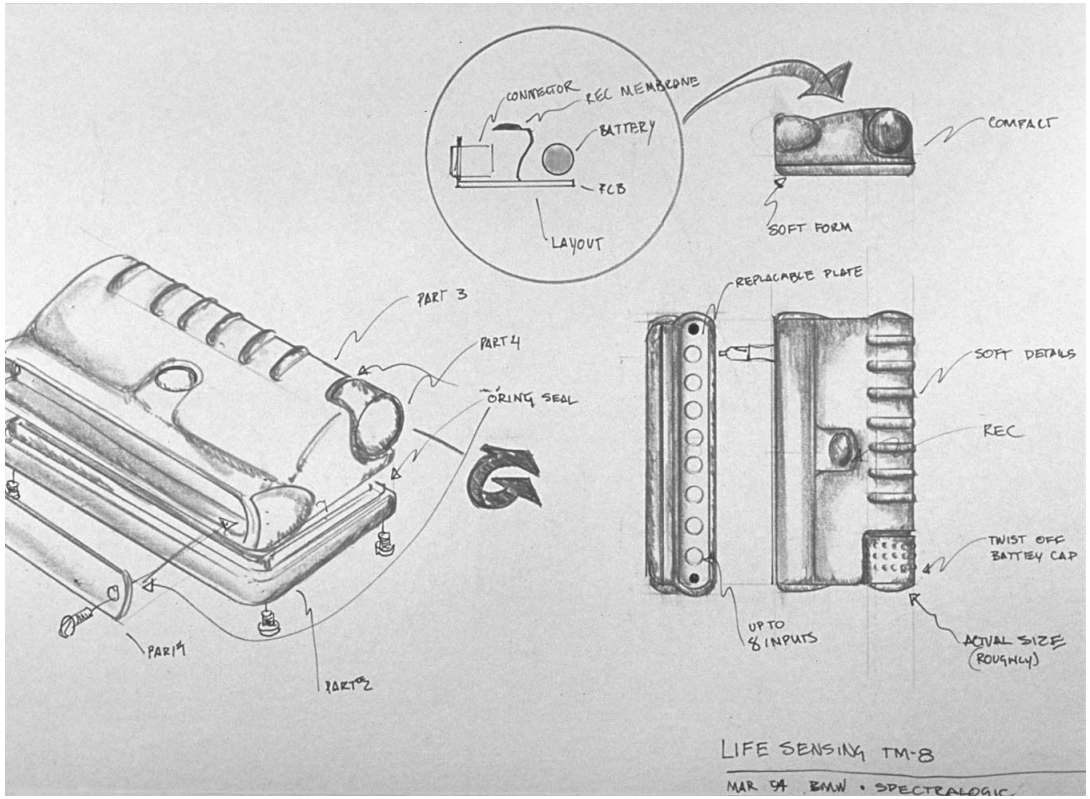

Figure 5-1

Great Ideas Often Start as Freehand Sketches Made on Scratch Paper.
Courtesy of ANATech, Inc.

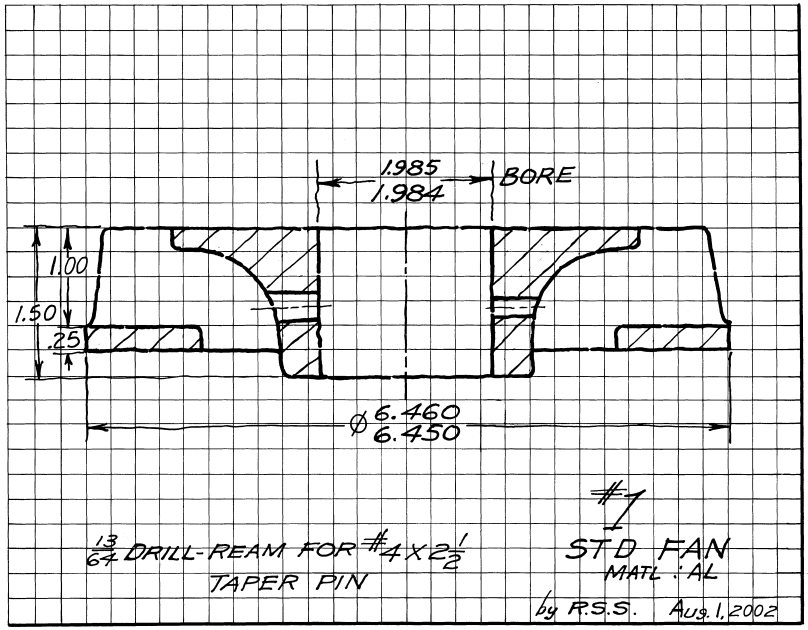

Figure 5-2

Sketch on Graph Paper.

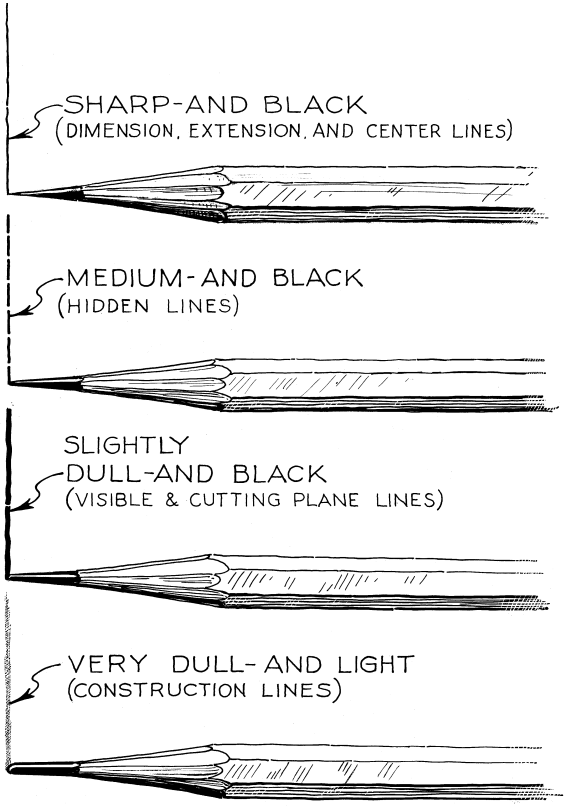

Figure 5-3

Pencil Points.

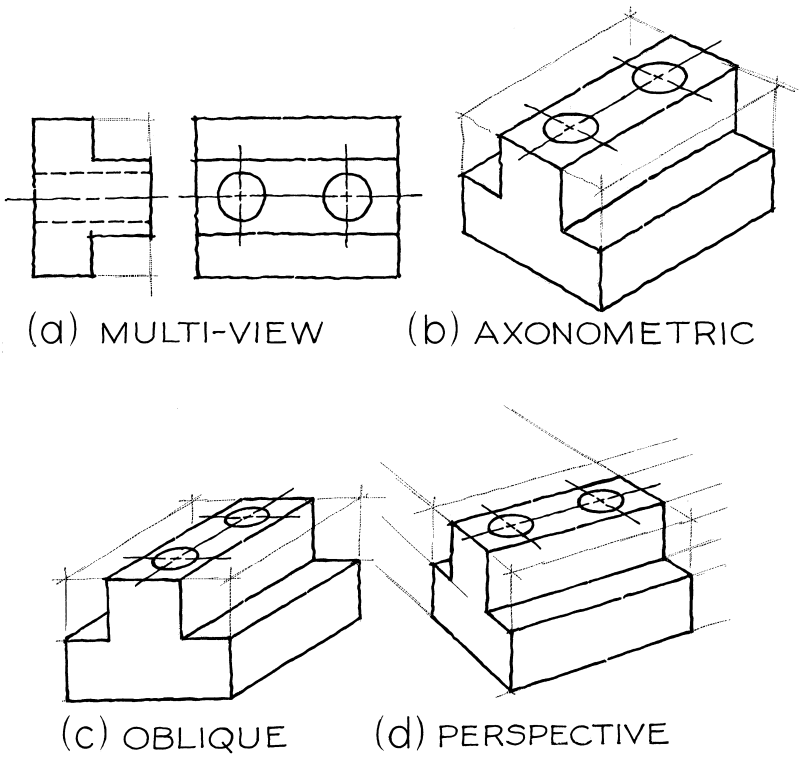

Figure 5-4

Types of Projection.

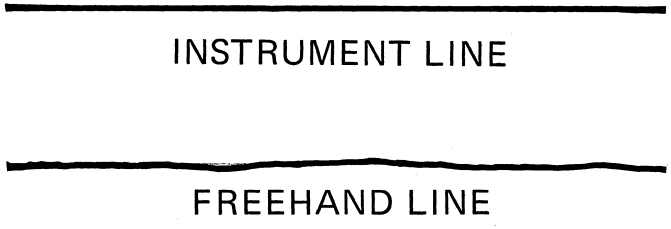

Figure 5-5
Comparison of Lines.

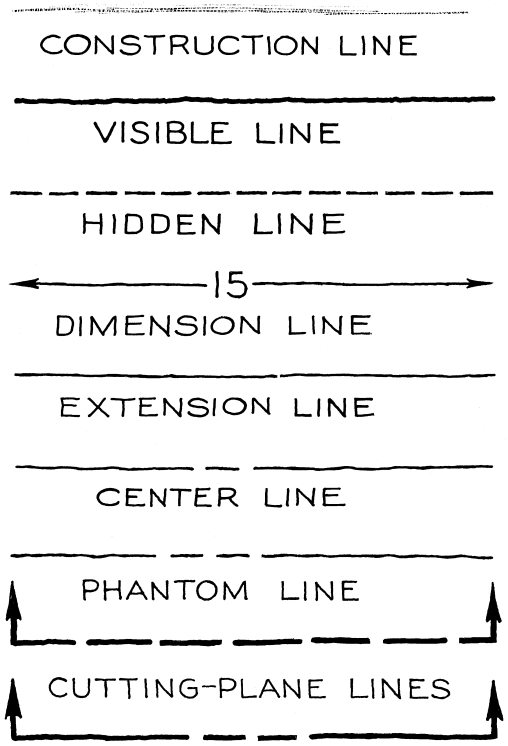

Figure 5-6

Sketch Lines.

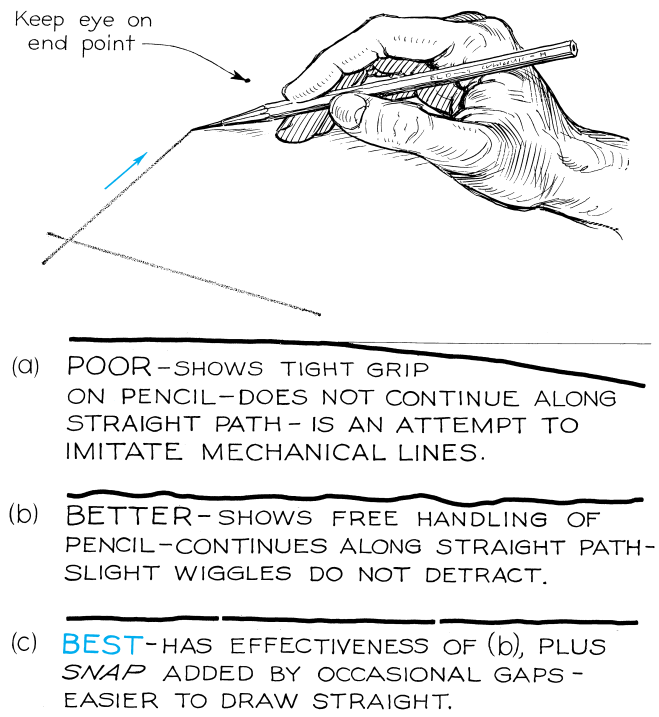

Figure 5-7

Drawing Horizontal Lines.

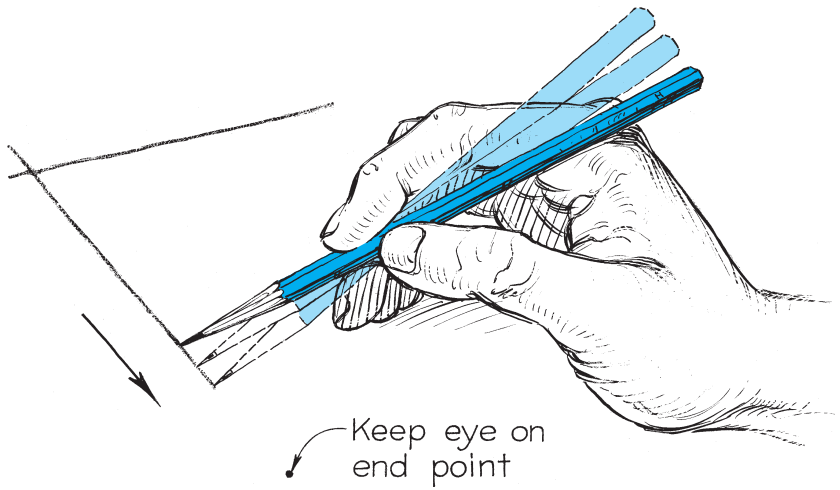

Figure 5-8

Drawing Vertical Lines.

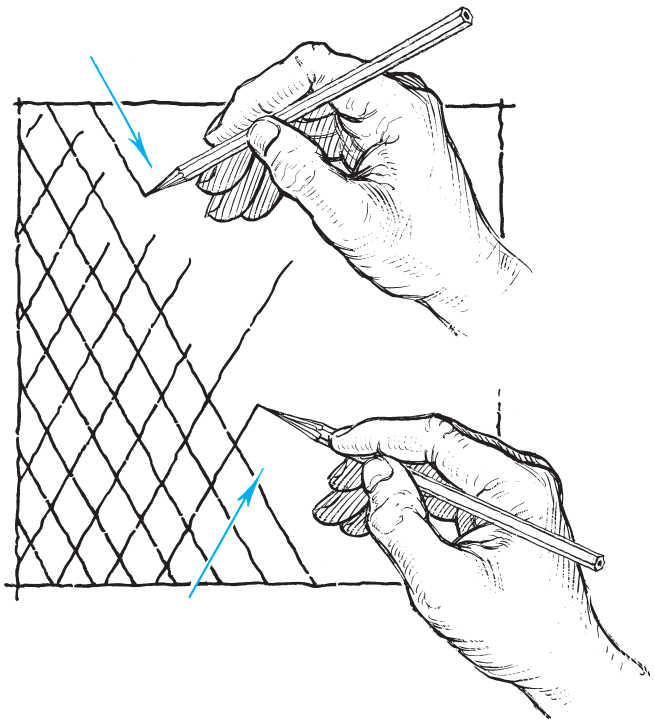

Figure 5-9

Drawing Inclined Lines.

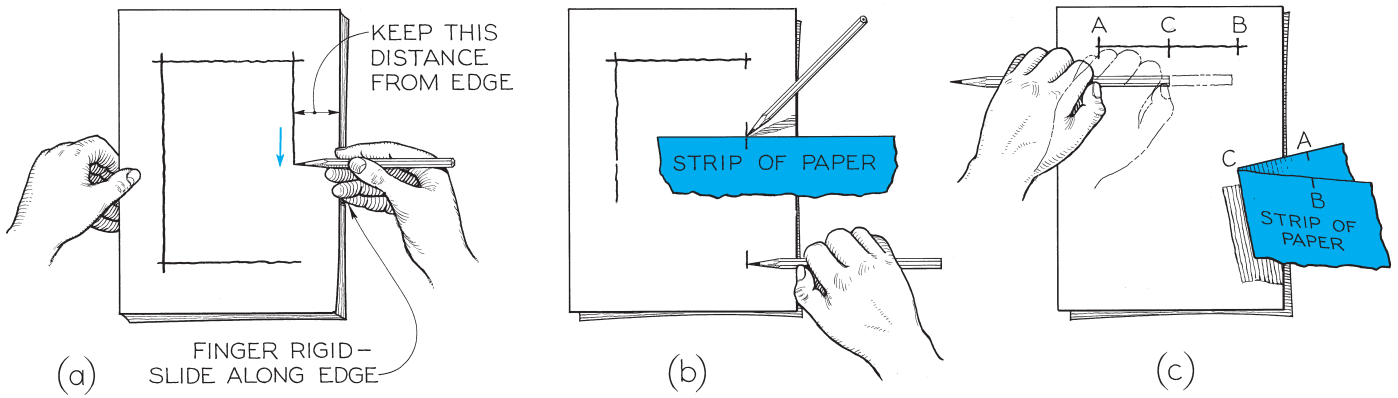

Figure 5-10

Blocking in Horizontal and Vertical Lines.

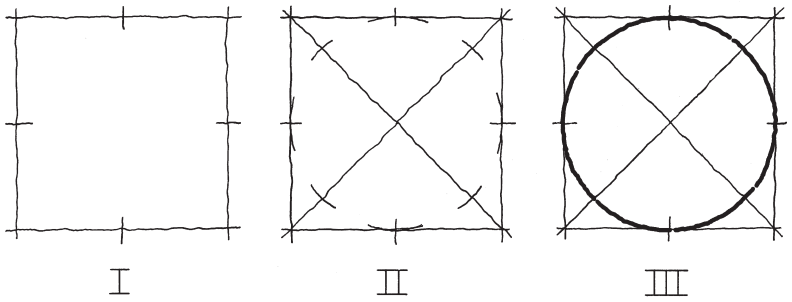

Figure 5-11

Sketching a Circle.

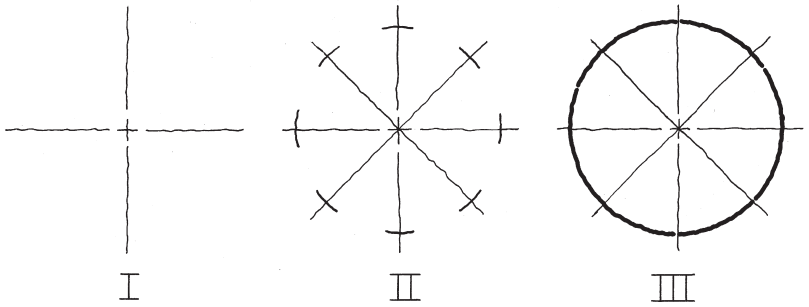

Figure 5-12

Sketching a Circle.

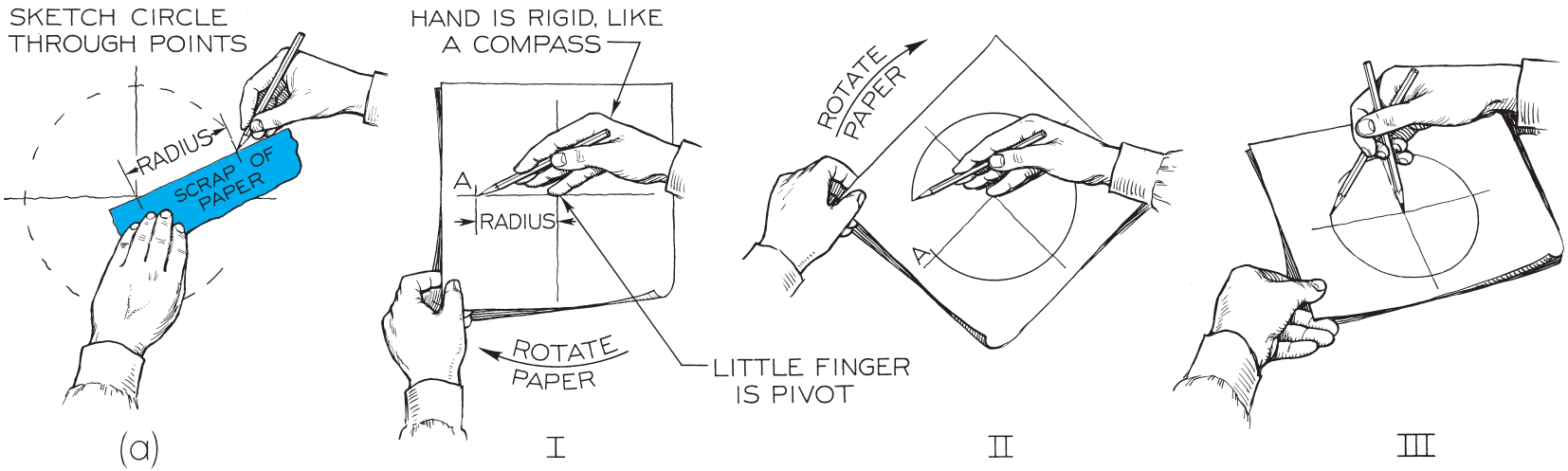

Figure 5-13

Sketching Circles.

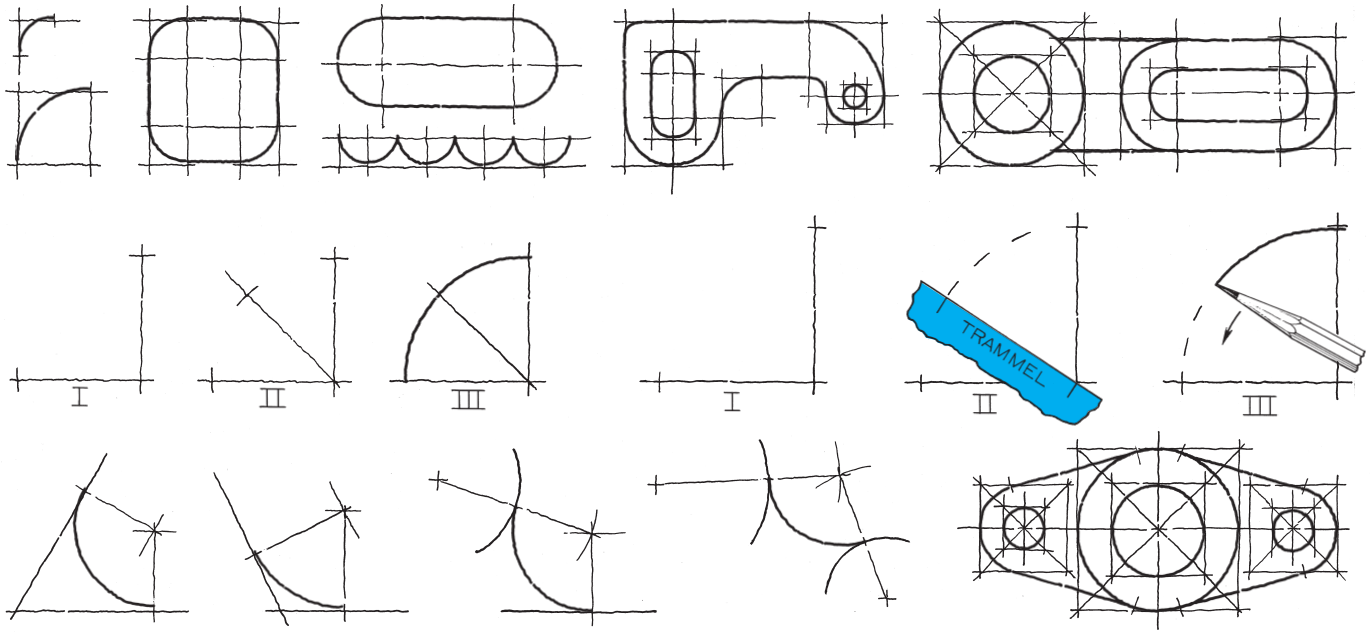

Figure 5-14

Sketching Arcs.

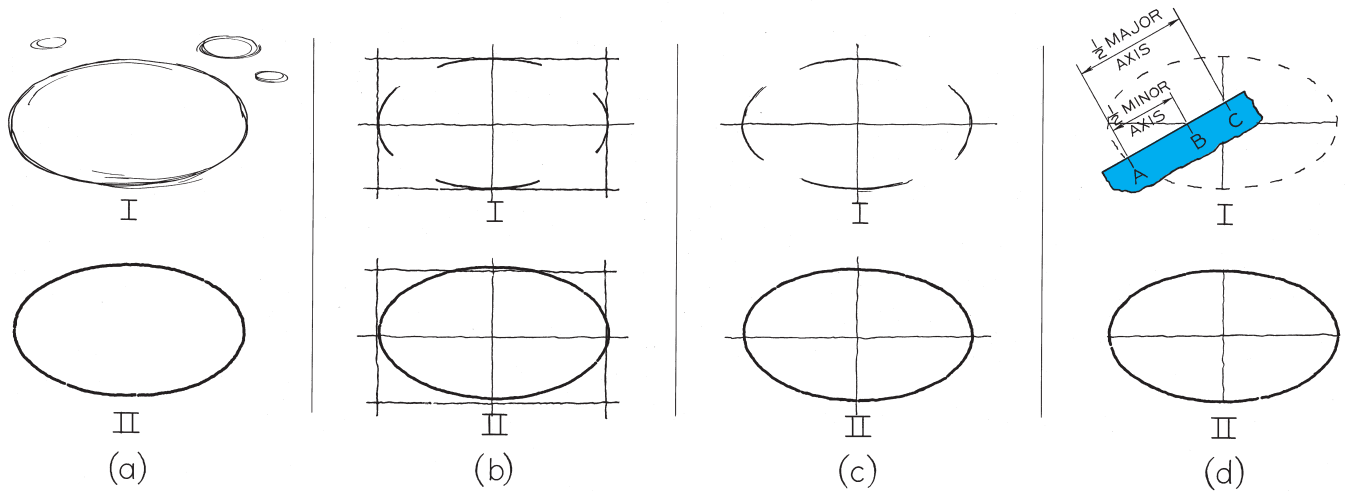

Figure 5-15

Sketching Ellipses.

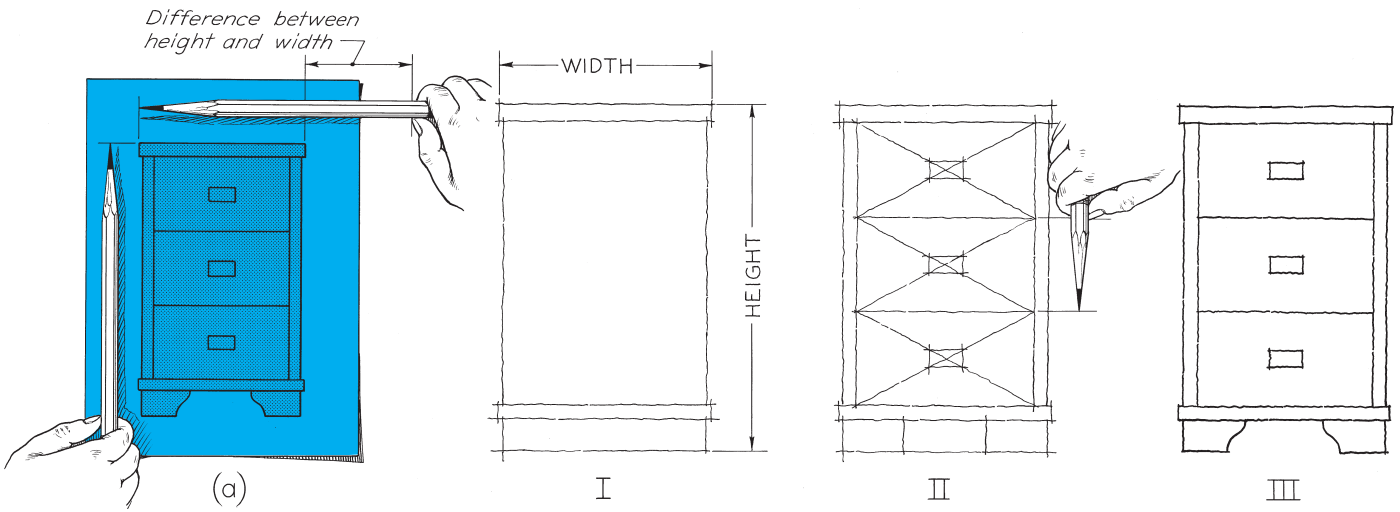

Figure 5-16

Sketching a Utility Cabinet.

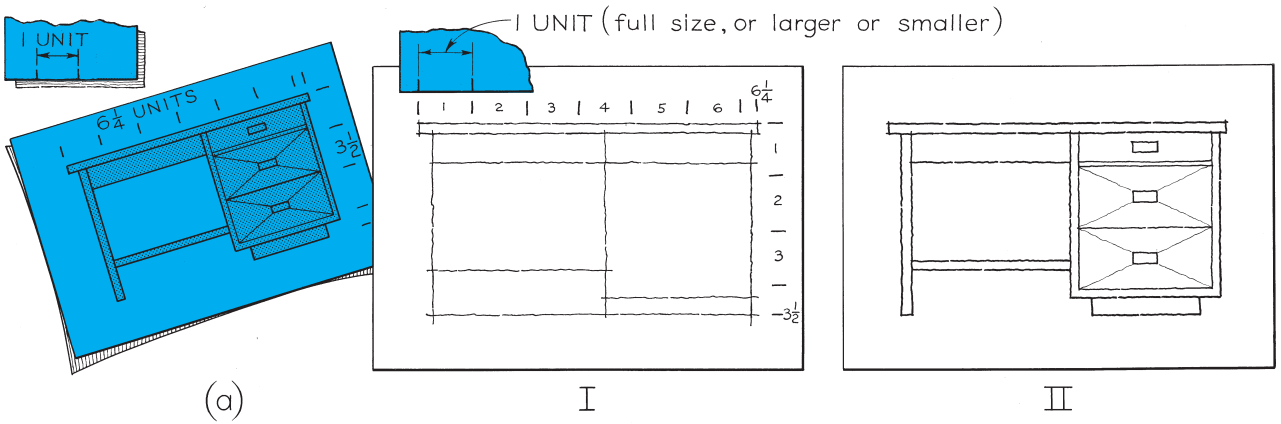

Figure 5-17

Sketching a Desk.

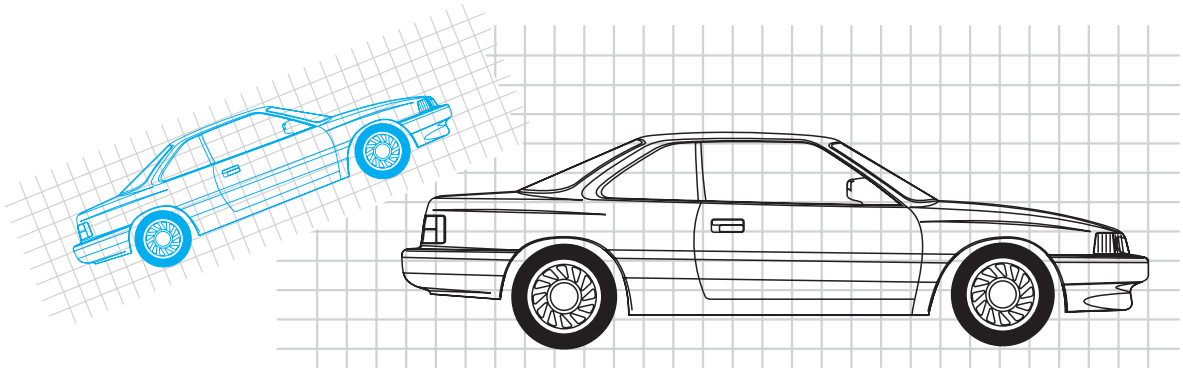

Figure 5-18

Squares Method.

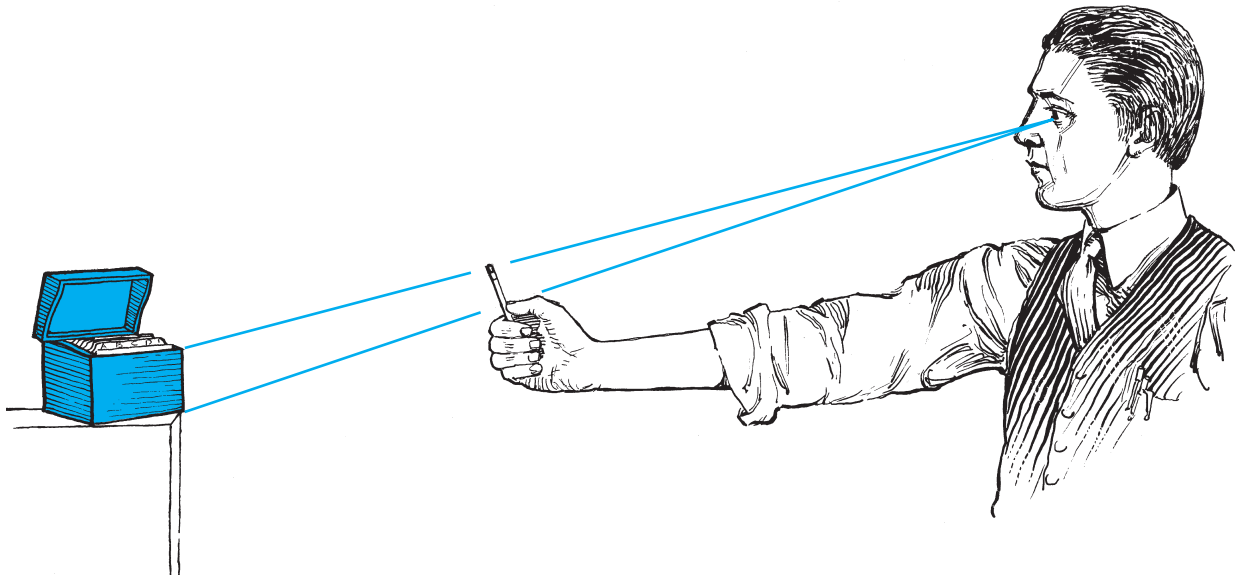

Figure 5-19

Estimating Dimensions.

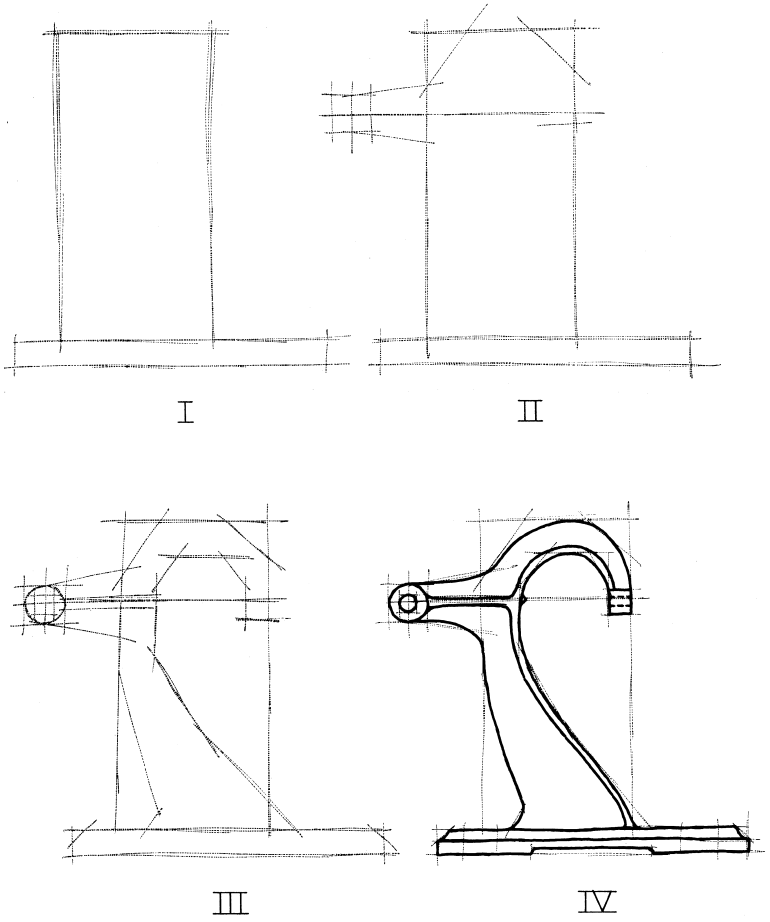

Figure 5-20

Blocking in an Irregular Object (Shaft Hanger).

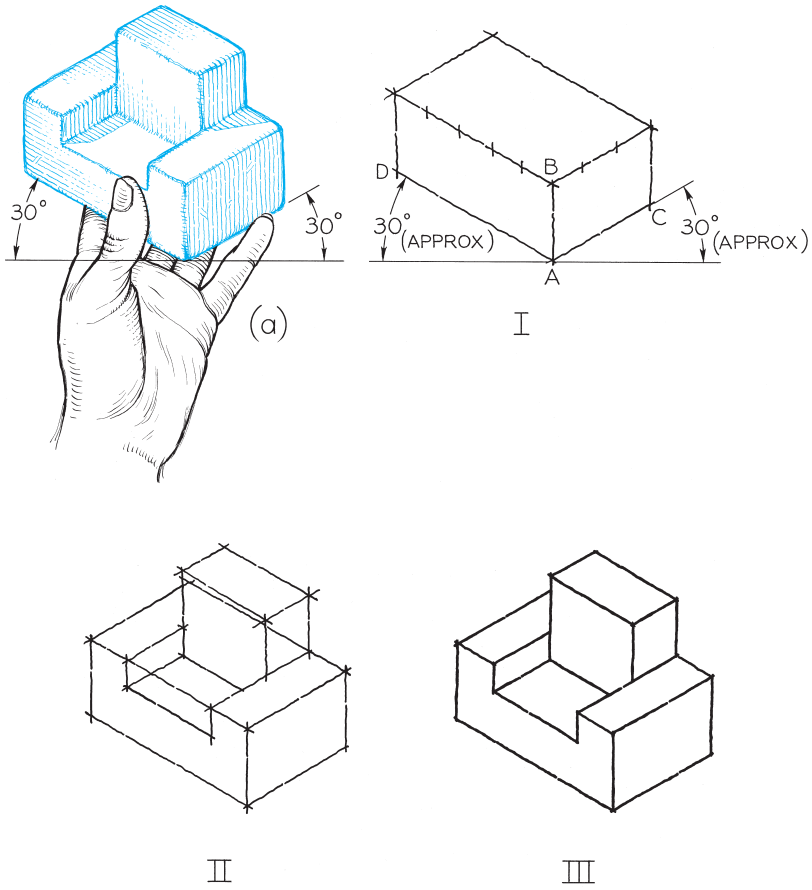

Figure 5-21

Isometric Sketching.

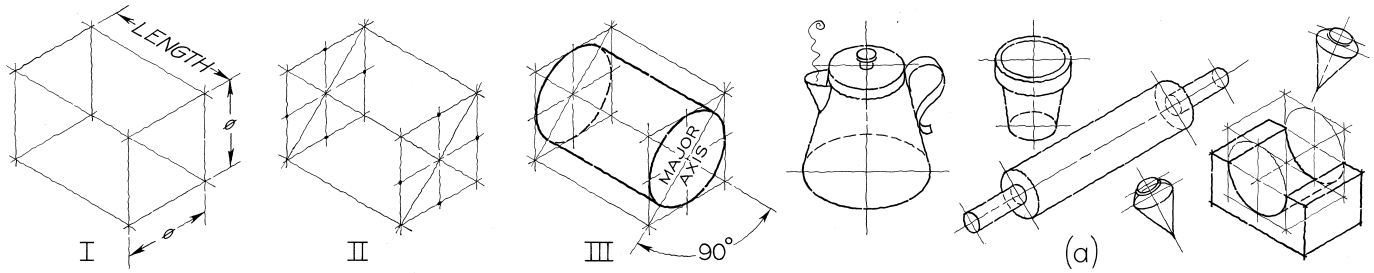

Figure 5-22

Isometric Ellipses.

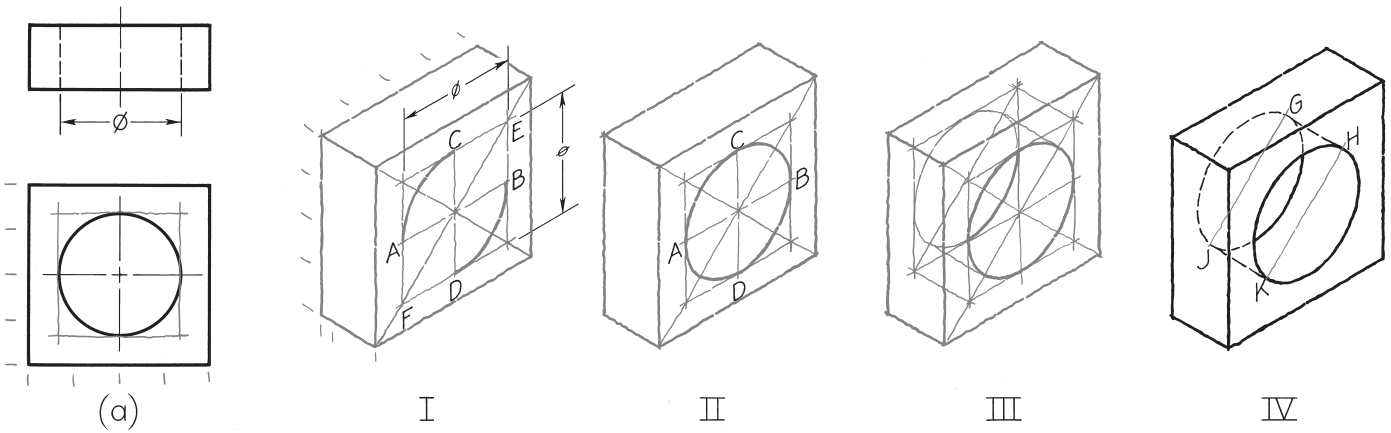

Figure 5-23

Isometric Ellipses.

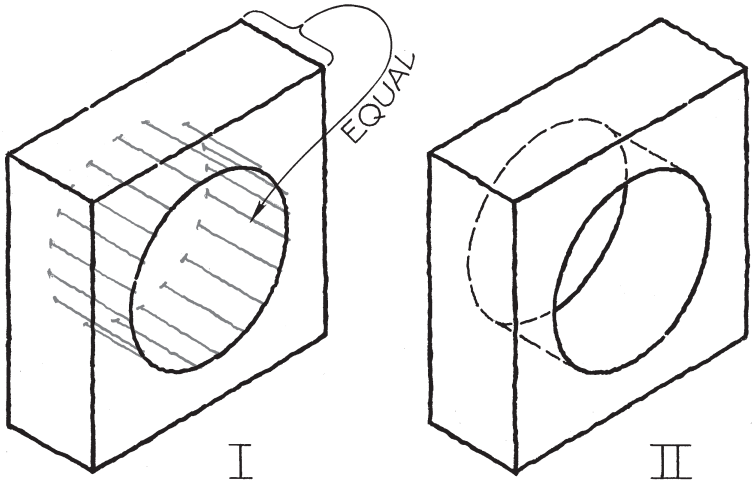

Figure 5-24

Isometric Ellipses.

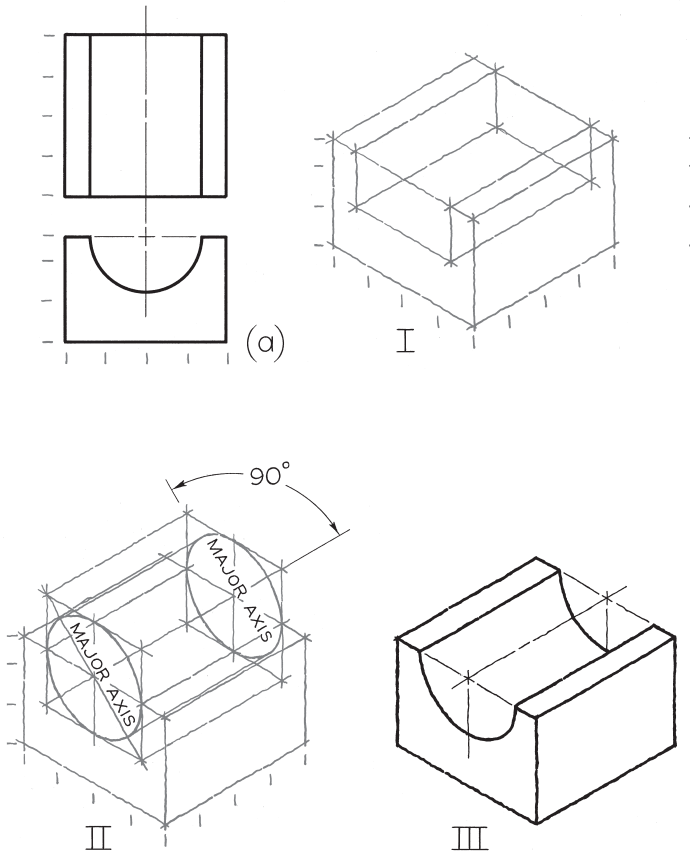

Figure 5-25

Sketching Semiellipses.

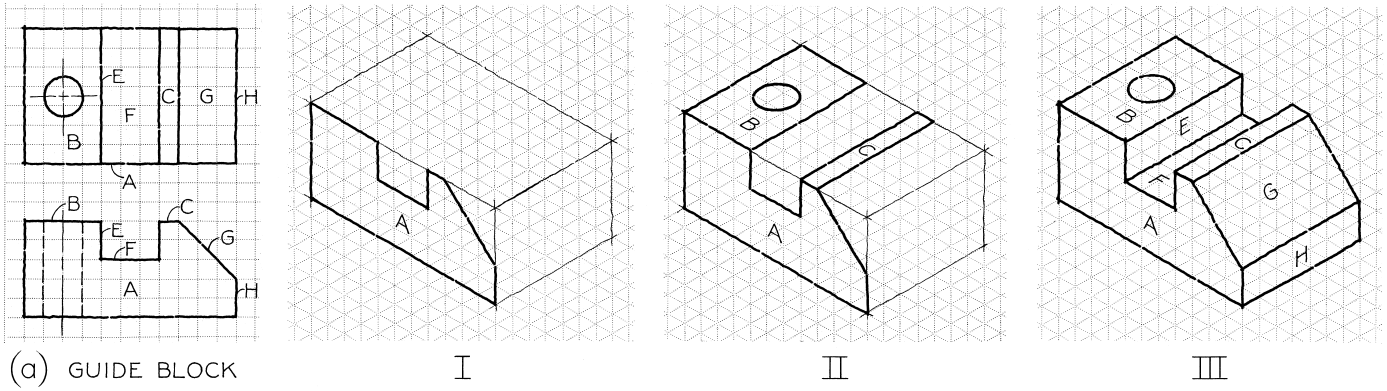

Figure 5-26

Sketching on Isometric Paper.

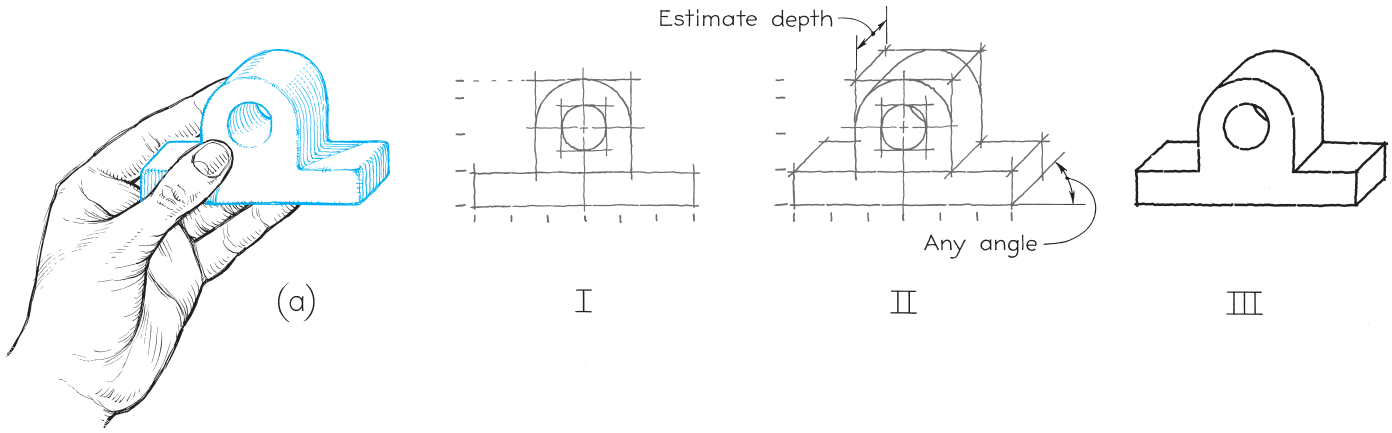

Figure 5-27

Sketching in Oblique.

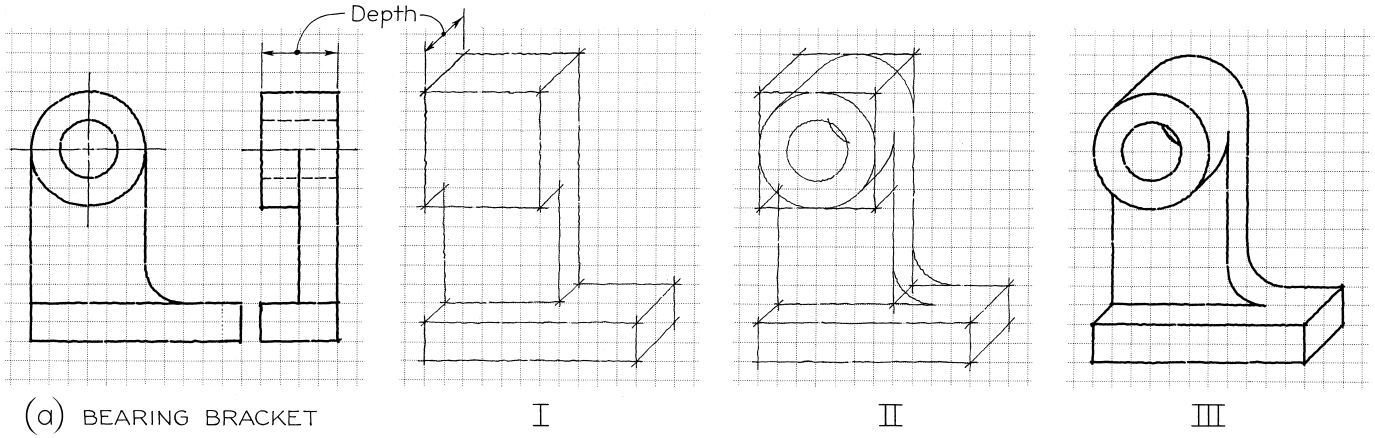

Figure 5-28

Oblique Sketching on Cross-section Paper.

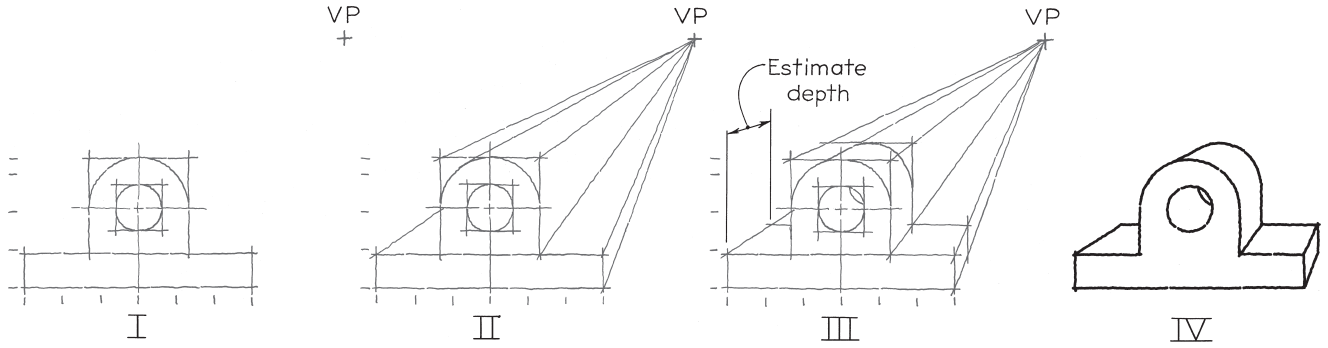

Figure 5-29

Sketching in One-Point Perspective.

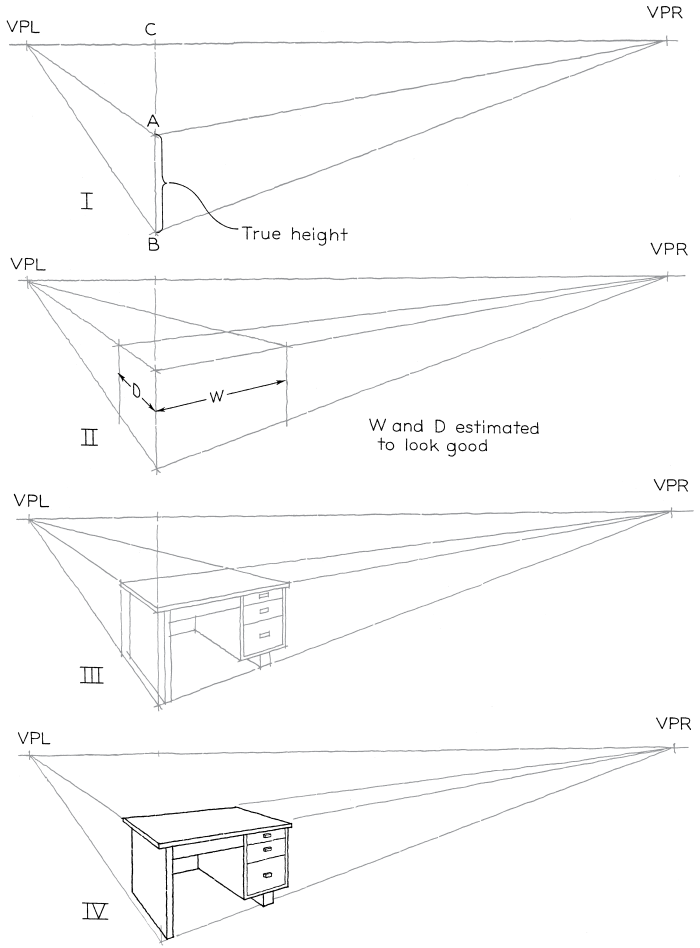

Figure 5-30

Two-Point Perspective.

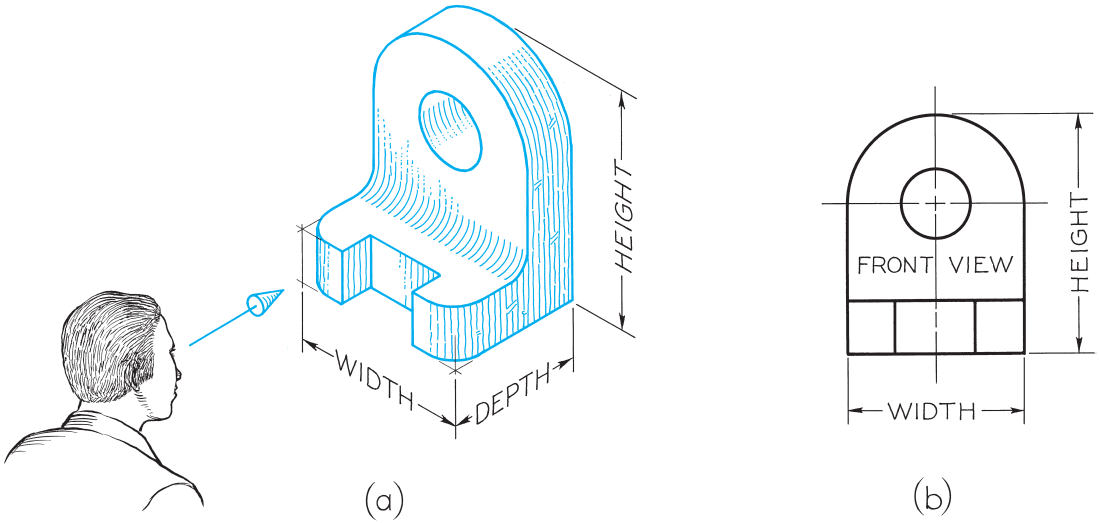

Figure 5-31

Front View of an Object.

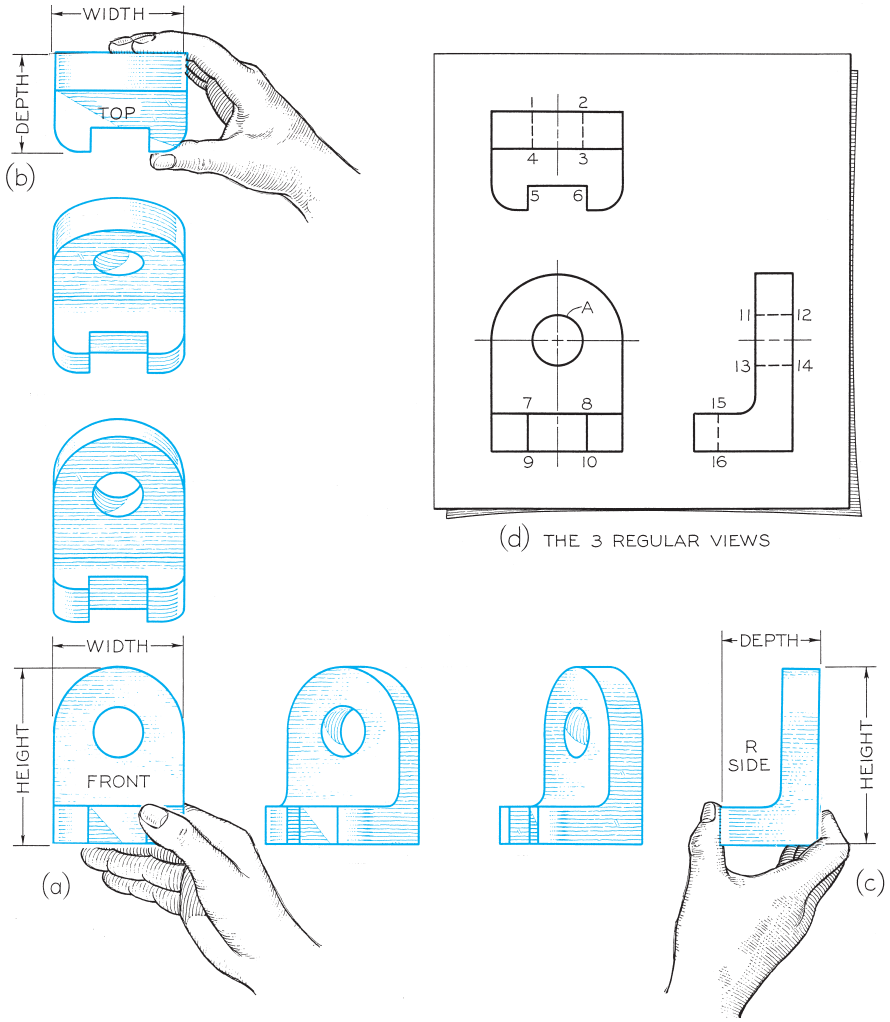

Figure 5-32

The Three Regular Views.

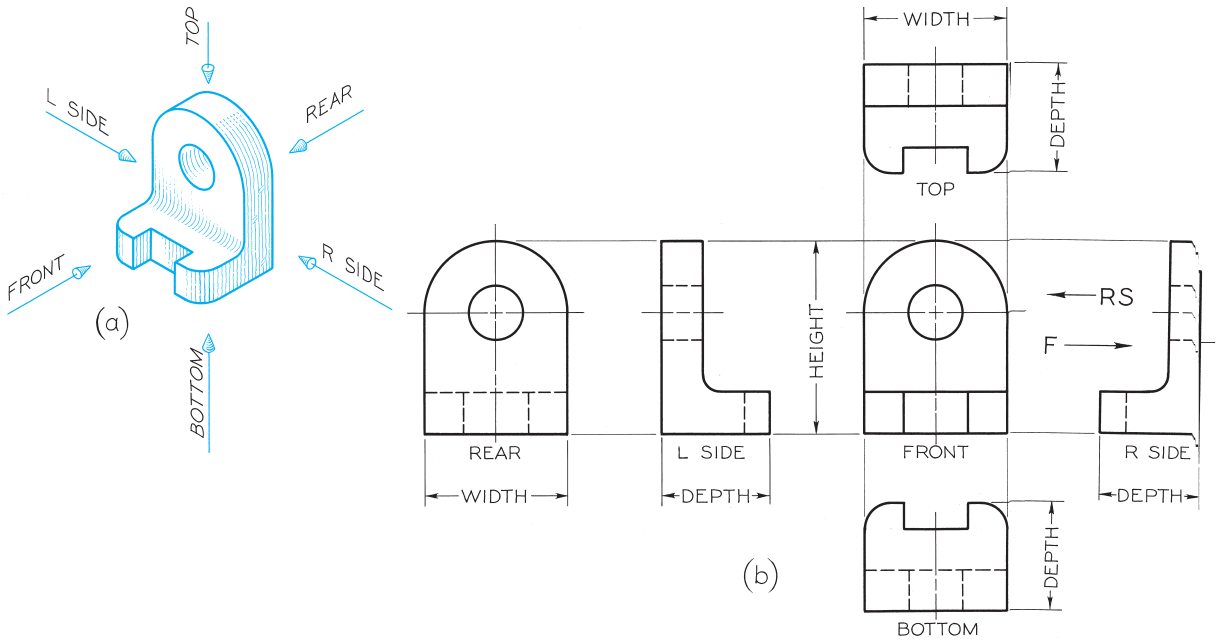

Figure 5-33

The Six Views.

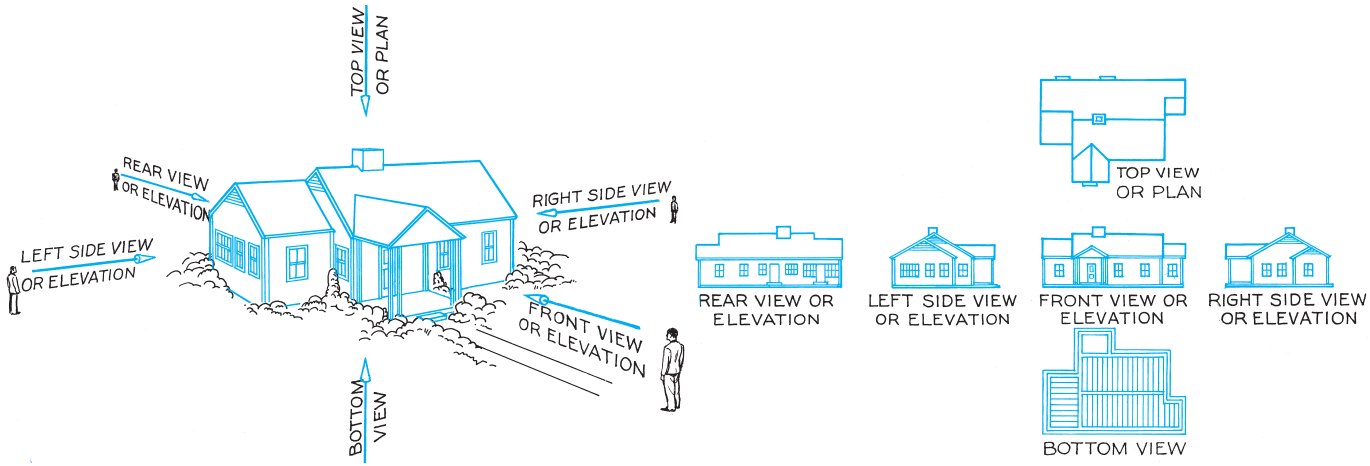

Figure 5-34

Six Views of a House.

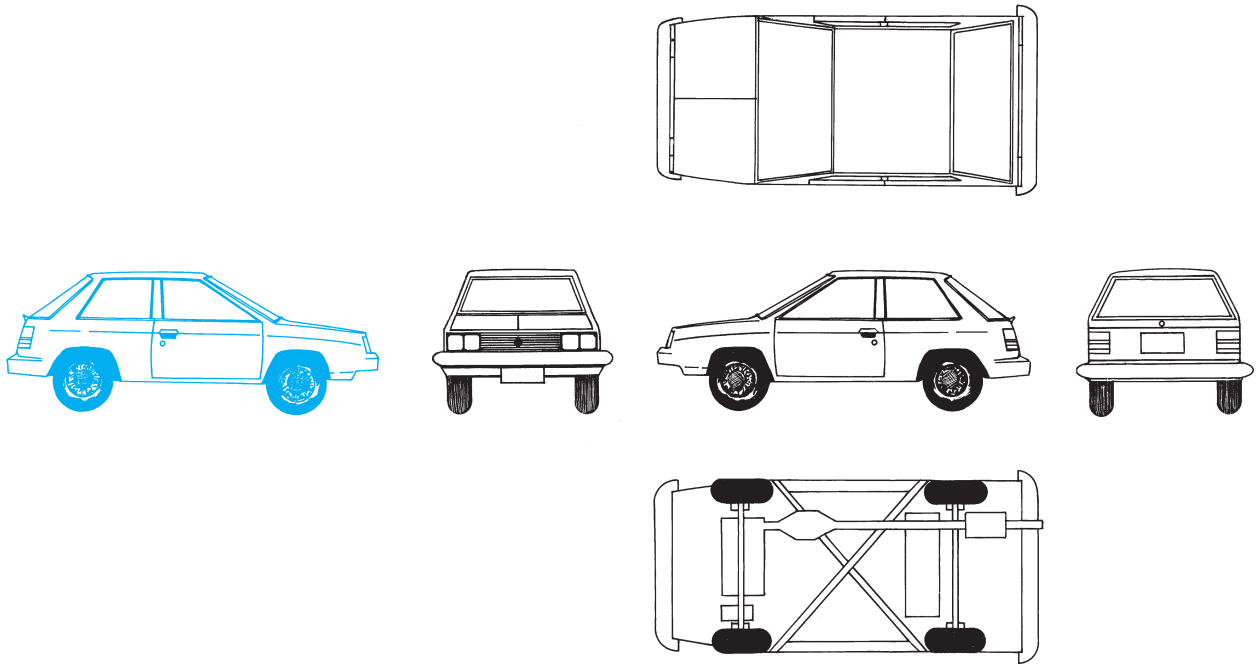

Figure 5-35

Six Views of a Compact Automobile.

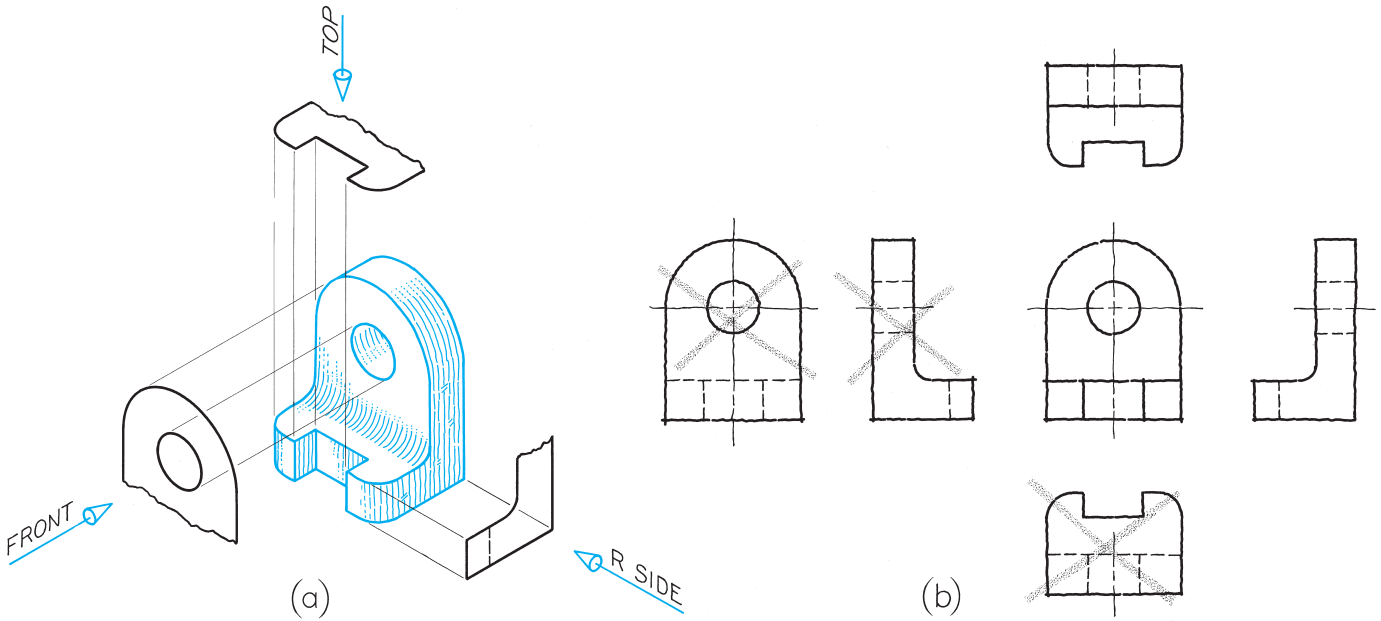

Figure 5-36

Choice of Views.

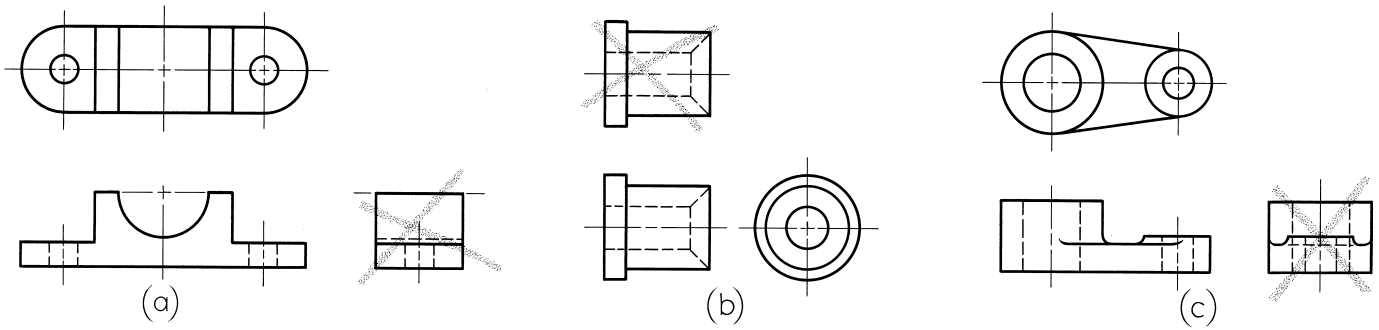

Figure 5-37

Two Necessary Views.

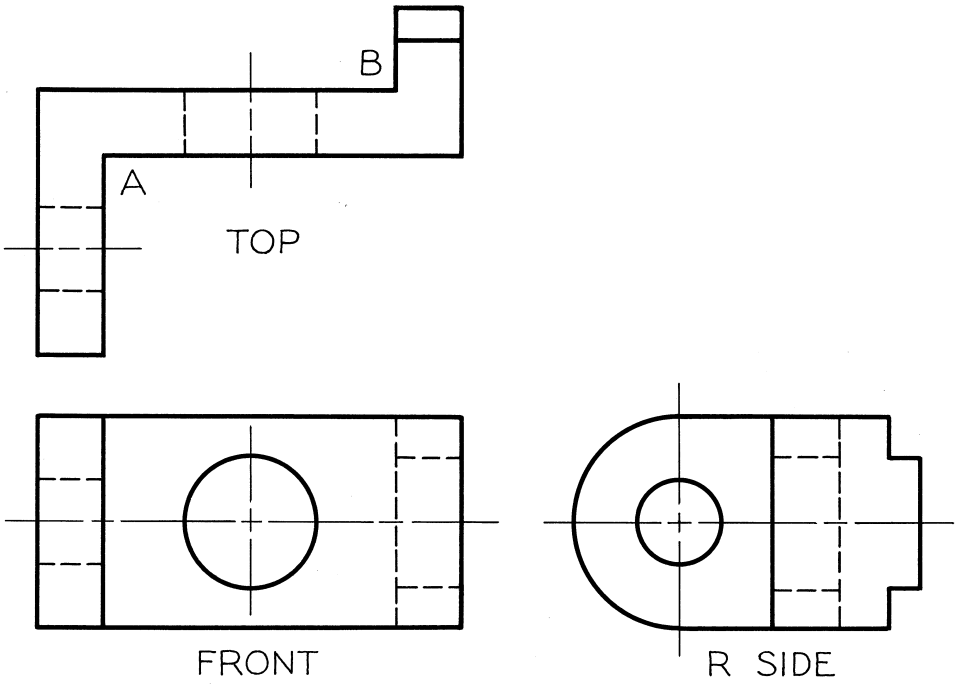

Figure 5-38

Three Views.

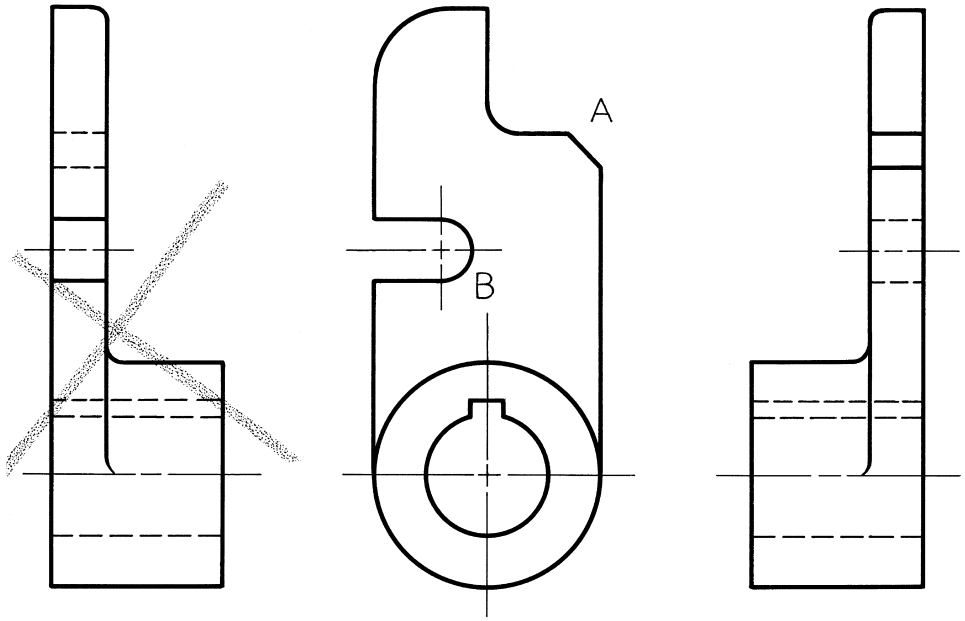

Figure 5-39

Choice of Right-Side View.

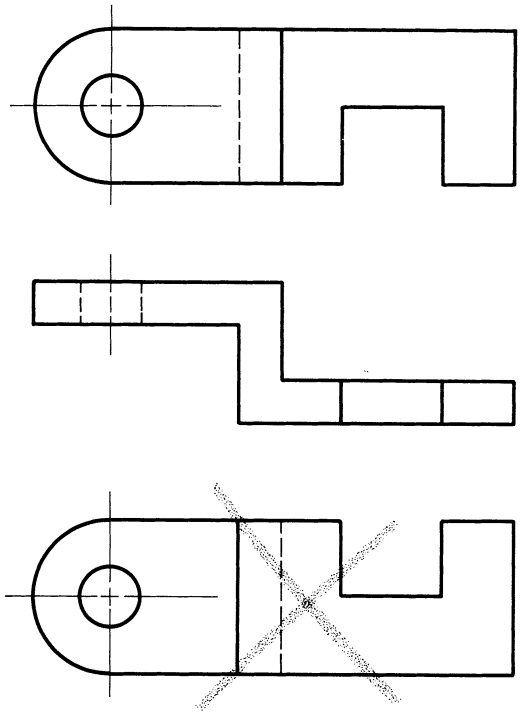

Figure 5-40

Choice of Top View.

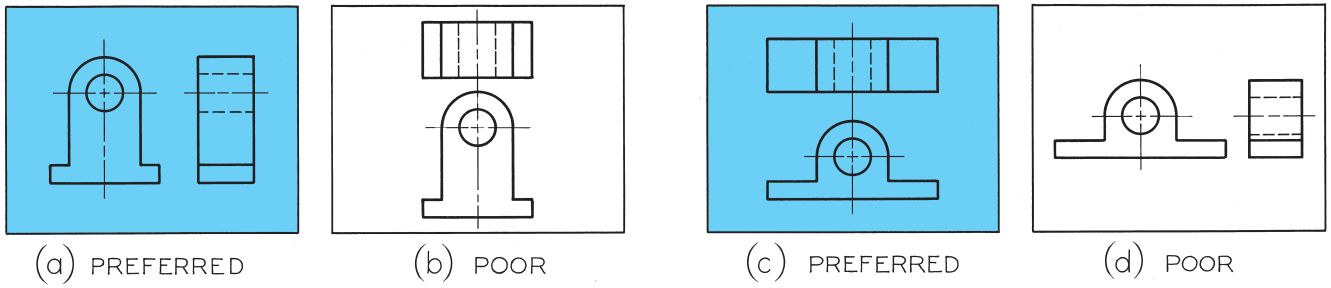

Figure 5-41

Choice of Views to Fit Paper.

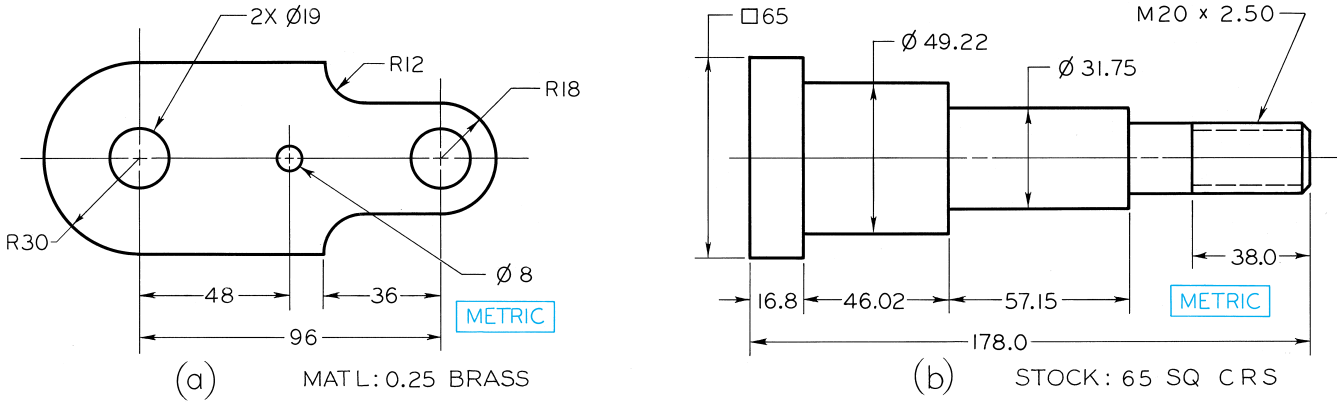

Figure 5-42

One-View Drawings.

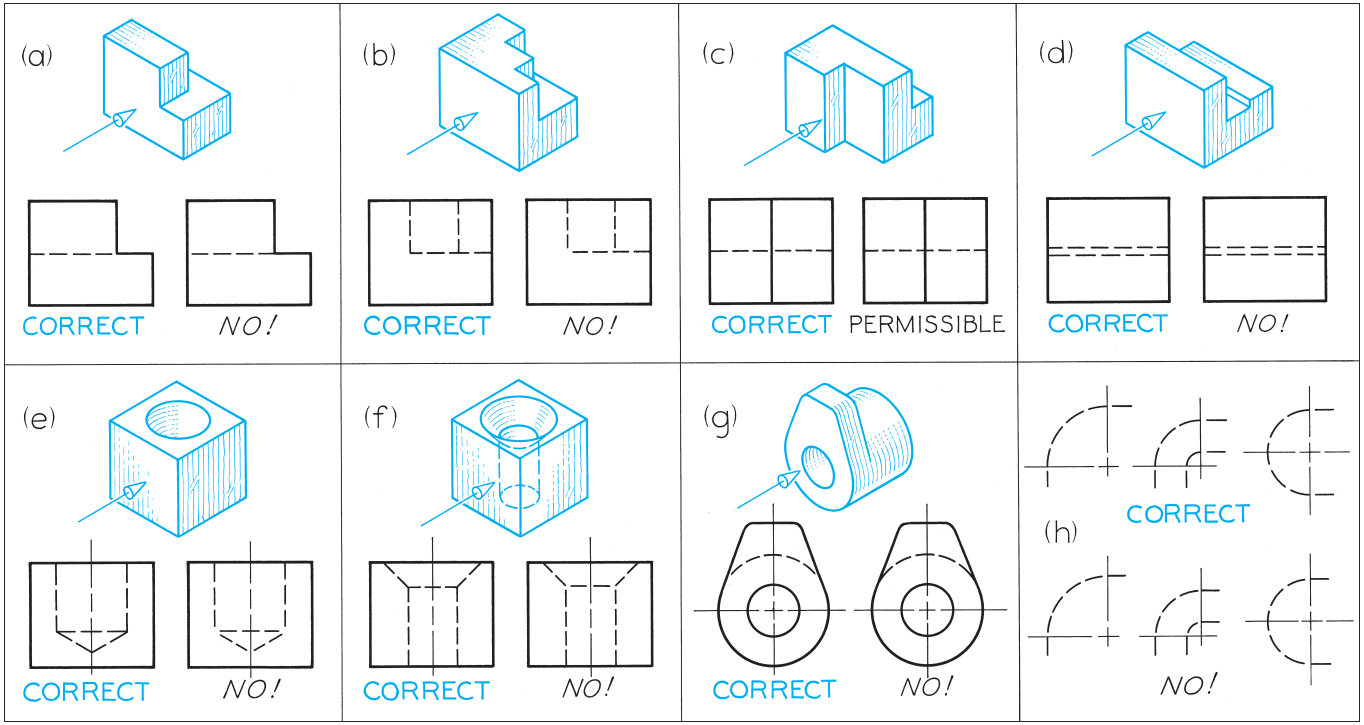

Figure 5-43

Hidden-Line Practices.

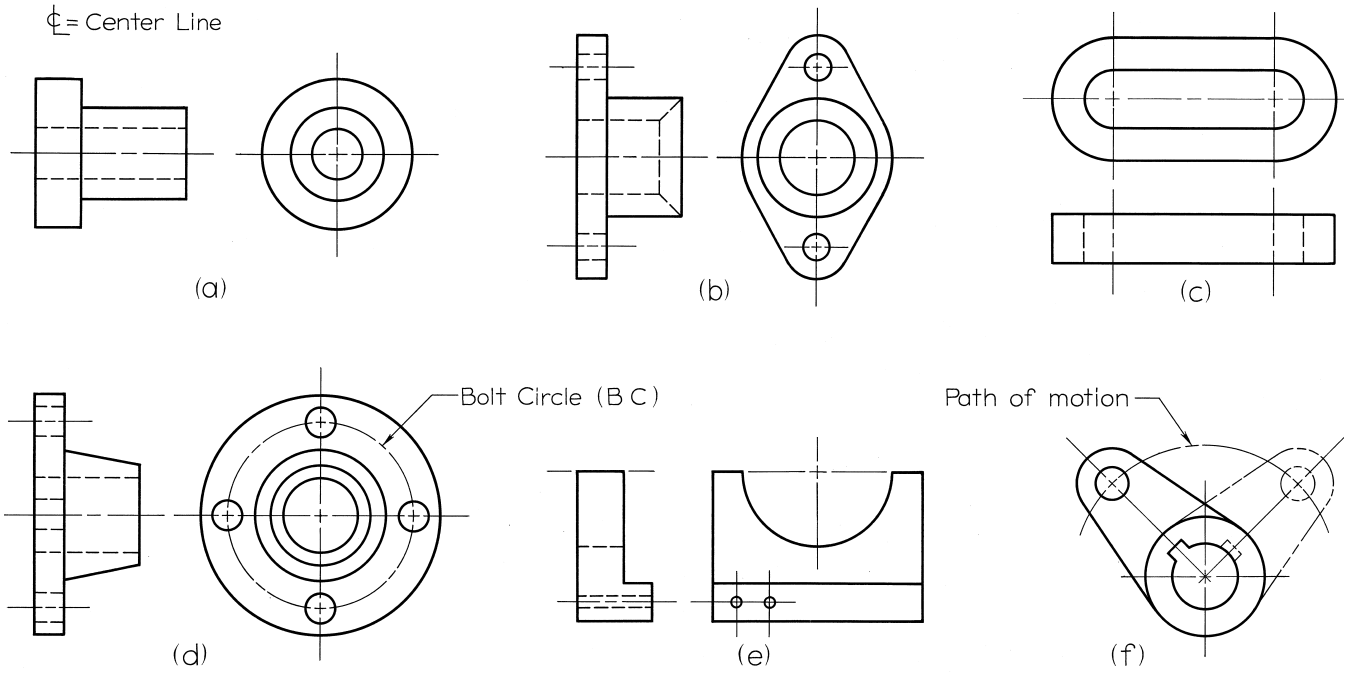

Figure 5-44

Center-Line Applications.

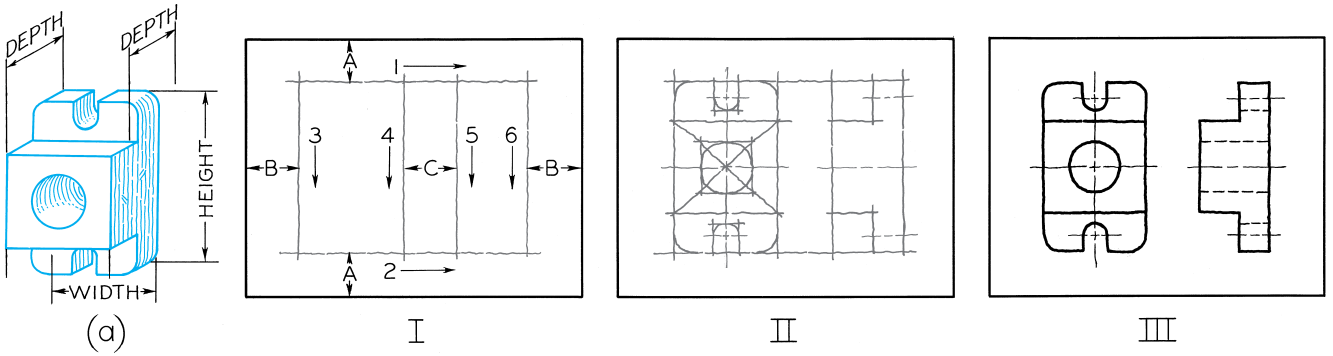

Figure 5-45

Sketching Two Views of a Support Block.

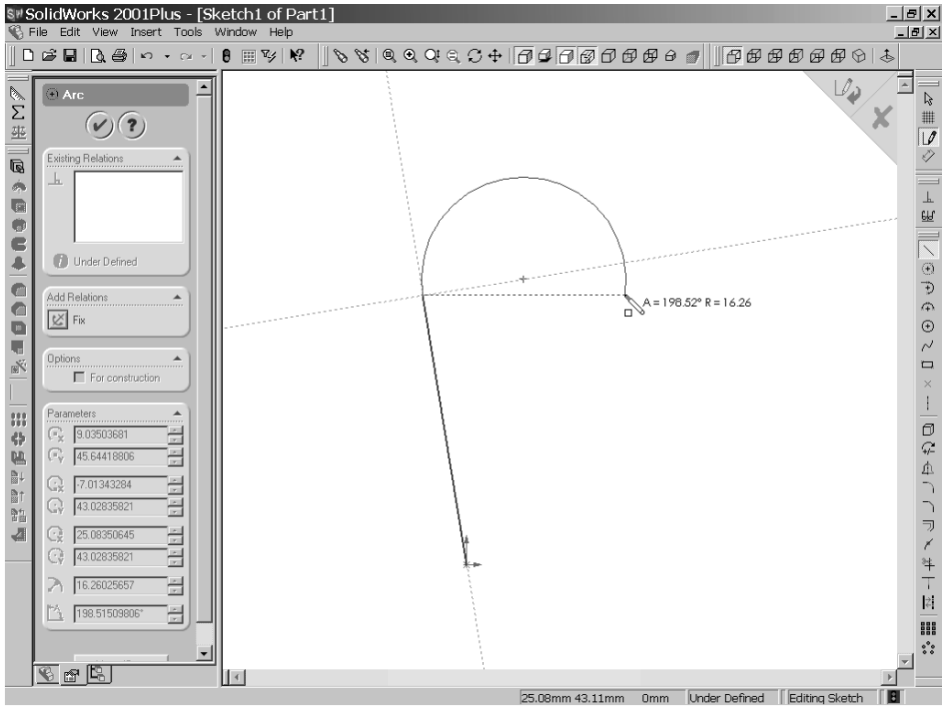

Figure 5-45.1a

(A) Rough Sketch

Images Courtesy of SolidWorks Corporation.

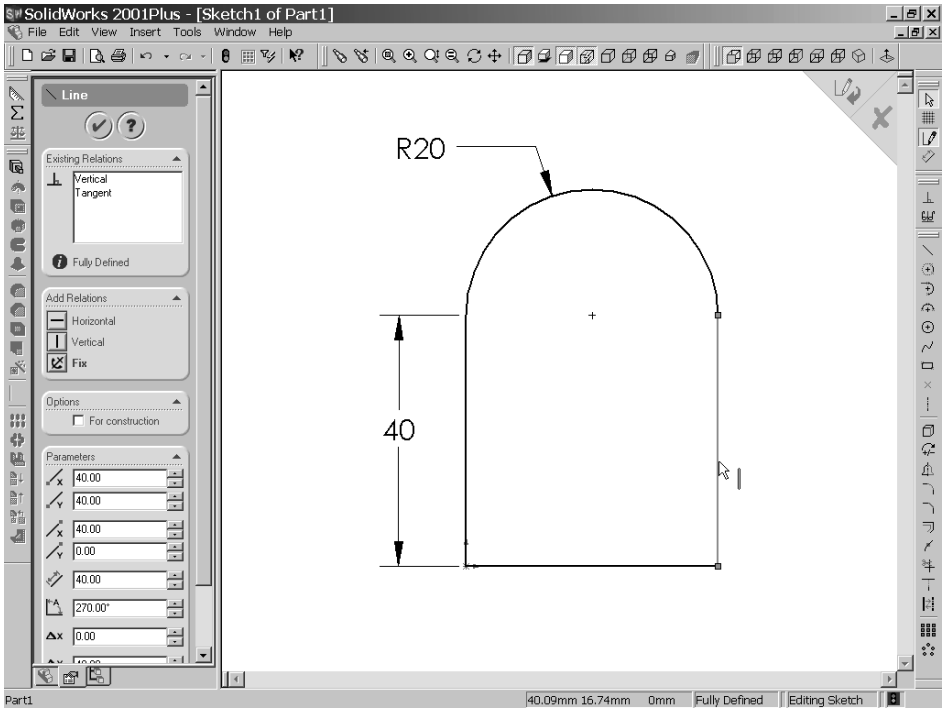

Figure 5-45.1b

(B) Constrained Sketch

Images Courtesy of SolidWorks Corporation.

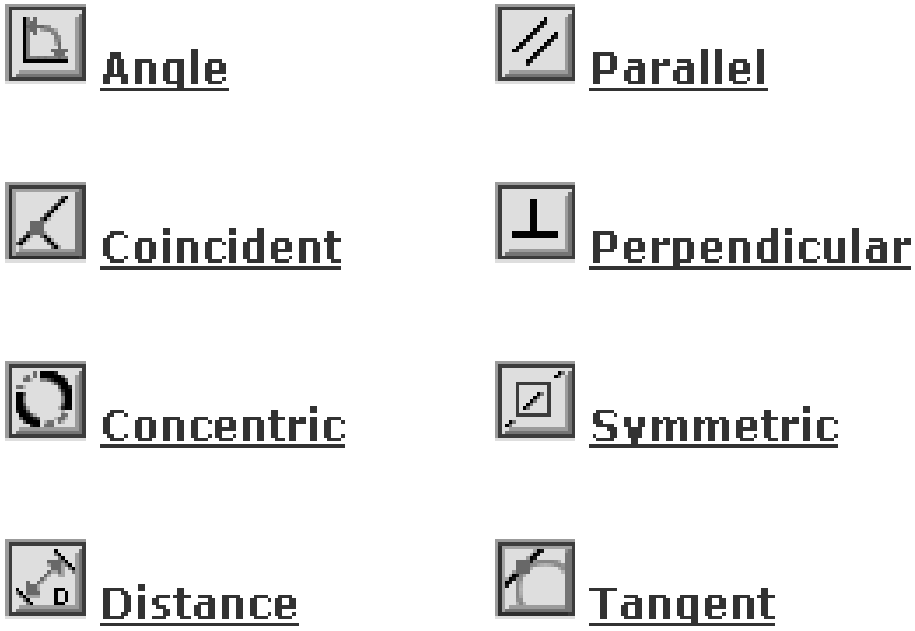

Figure 5-45.1c

(C) Assembly Constraints

Images Courtesy of SolidWorks Corporation.

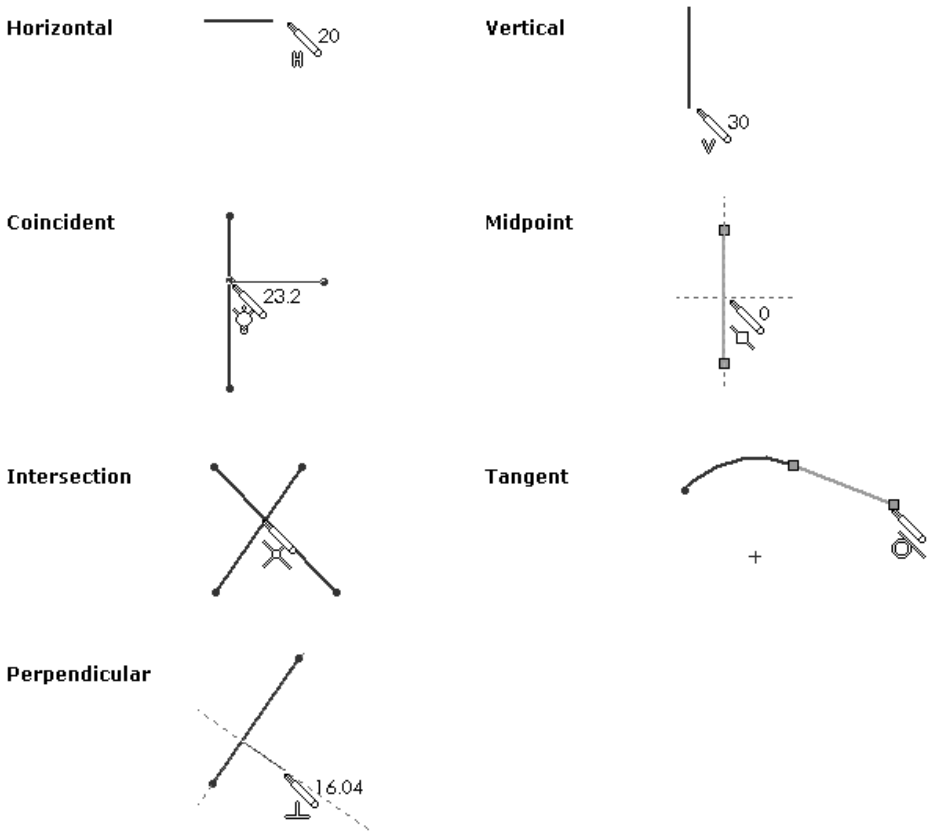

Figure 5-45.1d

(D) Sketch Constraints

Images Courtesy of SolidWorks Corporation.

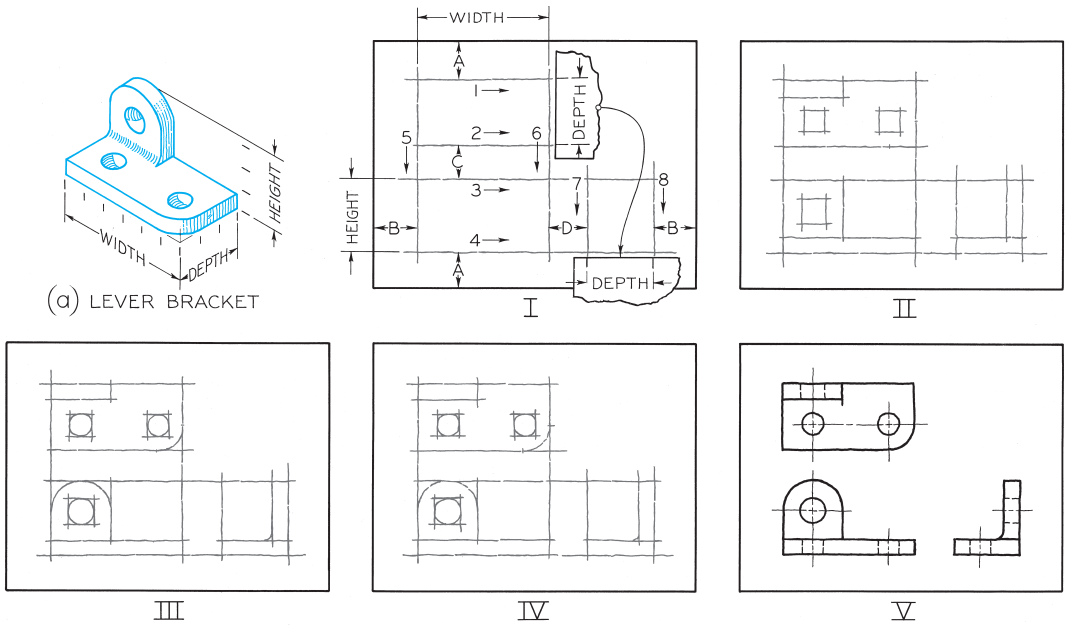

Figure 5-46

Sketching Three Views of a Lever Bracket.

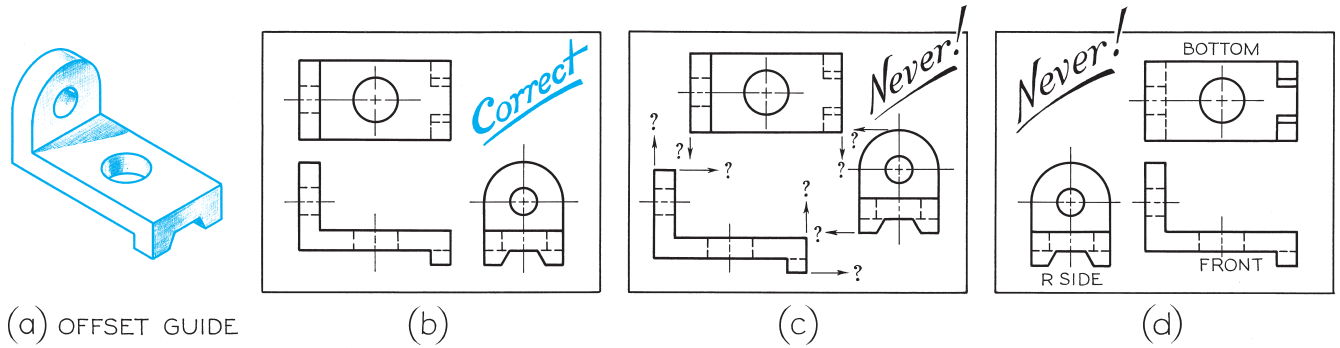

Figure 5-47

Position of Views.

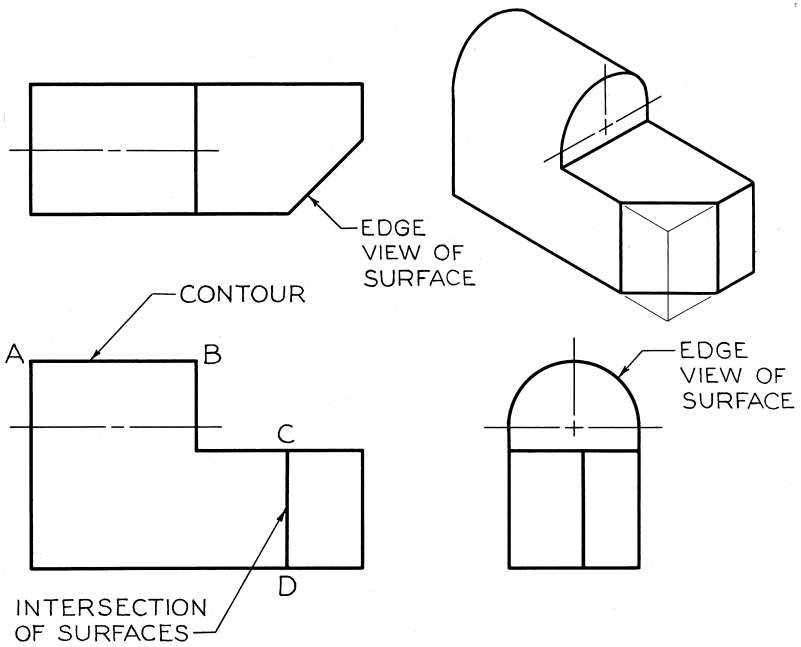

Figure 5-48

Meaning of Lines.

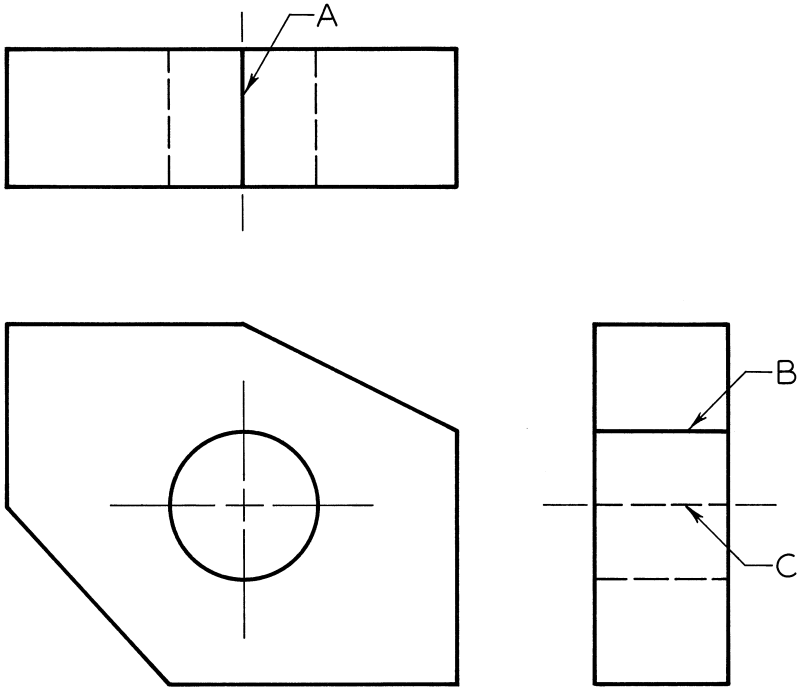

Figure 5-49

Precedence of Lines.

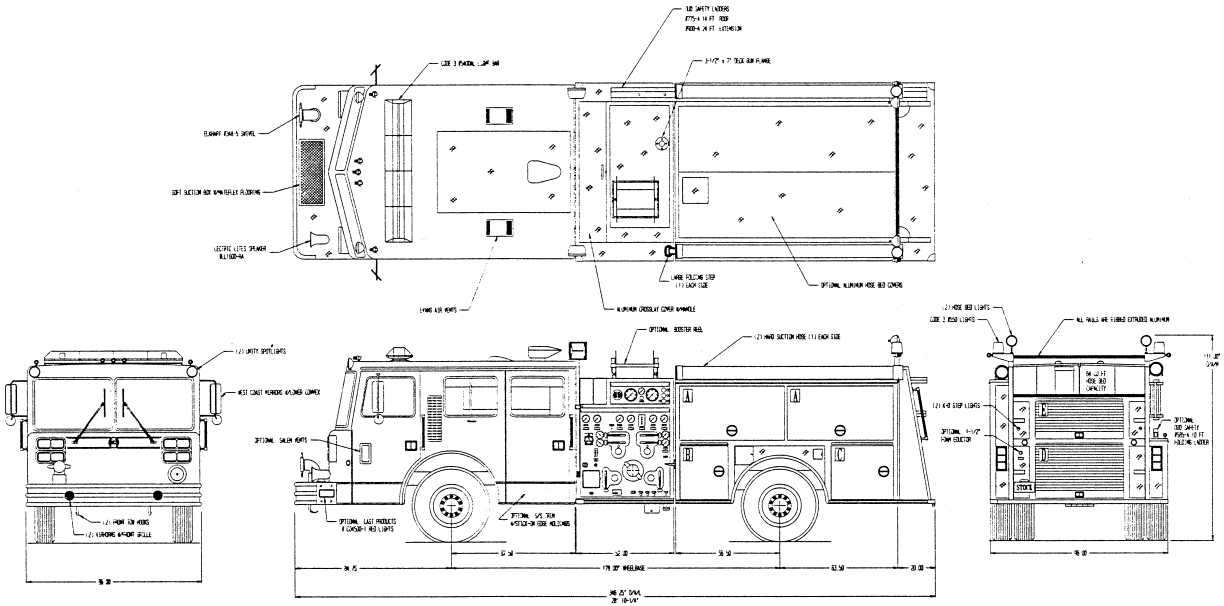

Figure 5-50

Multiview CAD Assembly Drawing of a MAXIM Fire Truck. *Courtesy of CADKEY.*

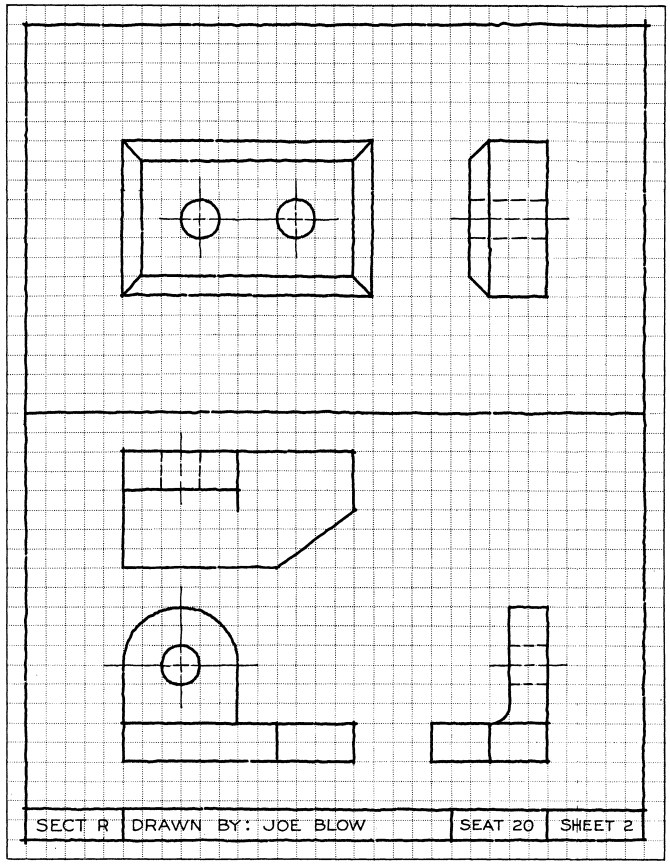

Figure 5-51

Multiview Sketch (Layout A–1).

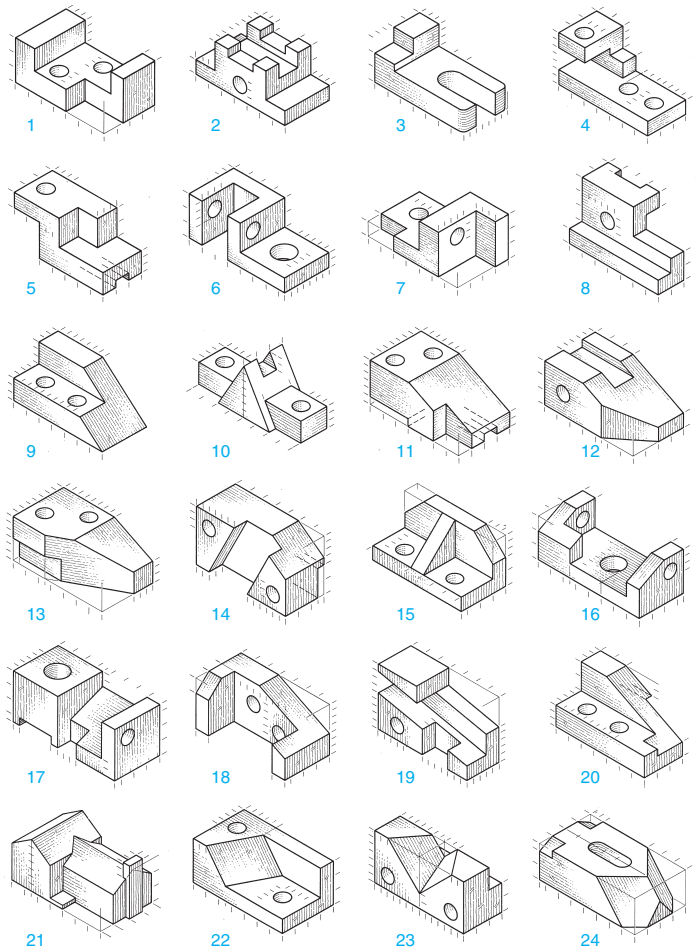

Figure 5-52

Multiview Sketching Problems. Sketch necessary views, using Layout A–1 (see Fig. 5.51) or A4–1 (see front cover endpapers) adjusted (freehand), on graph paper or plain paper, two problems per sheet as in Fig. 5.51. The units shown may be either .50” and .25” or 10 mm and 5 mm. See instructions on pages 143 and 144. All holes are through holes.

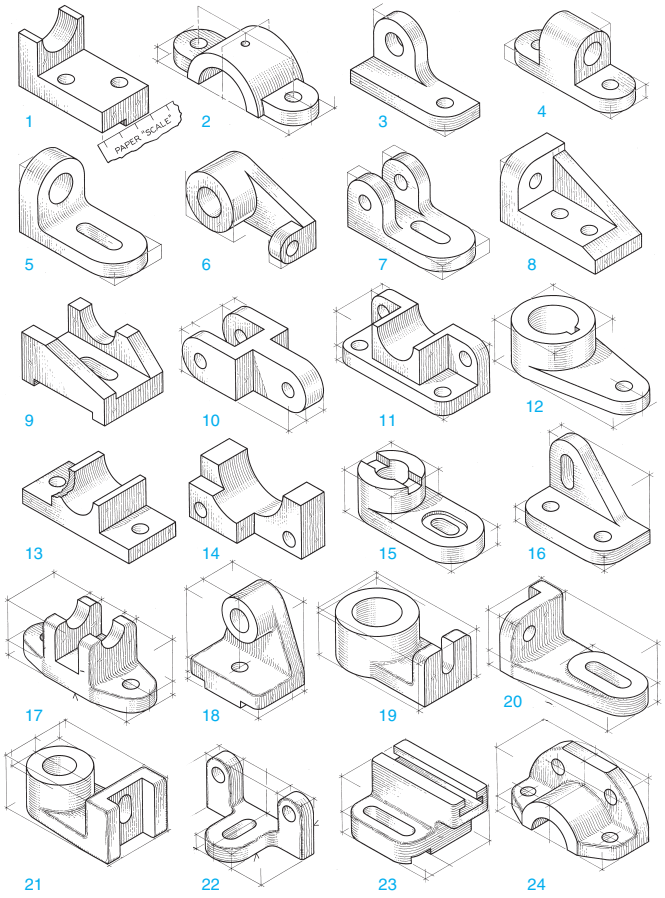

Figure 5-53

Multiview Sketching Problems. Sketch necessary views, using Layout A–1 or A4–1 adjusted (freehand), on graph paper or plain paper, two problems per sheet as in Fig. 5.51. Prepare paper scale with divisions equal to those in Prob. 1, and apply to problems to obtain approximate sizes. Let each division equal either .50" or 10 mm on your sketch. See instructions on pages 143 and 144. For Probs. 17–24, study §§6.34–6.36.

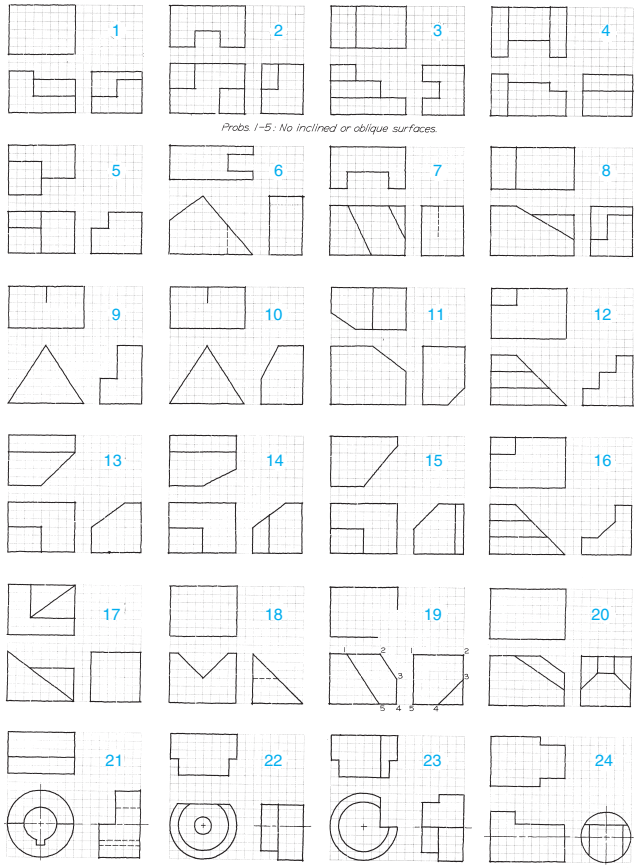

Figure 5-54

Missing-Line Sketching Problems. (1) Sketch given views, using Layout A–1 or A4–1 adjusted (freehand), on graph paper or plain paper, two problems per sheet as in Fig. 5.51. Add missing lines. The squares may be either .25” or 5 mm. See instructions on pages 143 and 144. (2) Sketch in isometric on isometric paper or in oblique on cross-section paper.

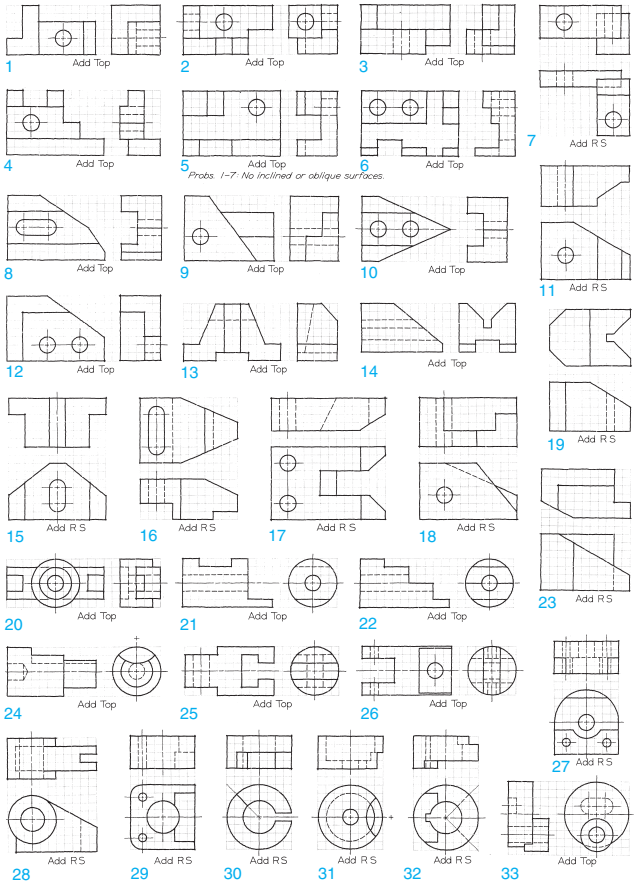

Figure 5-55

Third-View Sketching Problems. (1) Using Layout A–1 or A4–1 adjusted (freehand), on graph paper or plain paper, two problems per sheet as in Fig. 5.51, sketch the two given views and add the missing views, as indicated. The squares may be either .25” or 5 mm. See instructions on pages 143 and 144. The given views are either front and right-side views or front and top views. Hidden holes with center lines are drilled holes. (2) Sketch in isometric on isometric paper or in oblique on cross-section paper.