◀ **Figure 6.7** Notice how this student artist drew the form shadow on the subject's face with a soft edge to reveal the three-dimensional form of the cheek. What direction is the main light source coming from?

Perspective

Another major technique to use when making imitational drawings is linear perspective. It is often simply called perspective.

As you read in Chapter 1, artists use the technique of perspective to make drawings more lifelike. The goal in perspective drawing is to portray objects and figures as they appear to the viewer's eye. It is one way artists create the illusion of space or three dimensions on a flat, two-dimensional surface. Architects, industrial designers, and engineers also use perspective when making architectural or technical drawings. They use measuring instruments such as a compass or ruler and other drawing tools to accurately draw objects in perspective. You can also create realistic freehand drawings by using perspective. **Freehand drawings** are *drawings done without measuring tools.*

For freehand drawings, you use careful estimation instead of exact measurements. Careful estimation requires using your observation skills or sighting an object by holding a ruler at arm's length to make estimated measurements. (See Studio Project 6–1 on pages 114–115 for more details.) In the activity on page 93, you learned how to estimate proportions in the still-life drawings you completed. Now you will learn how to show three-dimensional objects at different positions in relation to the horizon.

The Horizon

The **horizon** is *a line that divides the sky from the ground or a body of water.* From most points of view, the horizon is hidden by trees, hills, or buildings. You may have seen the horizon, however, while you were at the beach looking out to sea or when you were in the country on flat land. We see the horizon only because the earth is a sphere and always curves downward away from where we are standing. Look at the diagram in **Figure 6.8.**

The horizon always seems to be at eye level, or at the height of our eyes above the ground. If you move, it moves. You can prove this simply by looking at something outdoors that is taller than yourself. If nothing is hiding the horizon from view, it will seem to pass behind the object. If you are able to step up on a ladder and look over the object, the horizon will seem to move up to a point above the object. The horizon will always be at your eye level. For this reason, the horizon line is often referred to as the eye-level line.

If your eye level, or the horizon, is above an object, you will see the top of the object. If your eye level is lower than the top of an object, you will be unable to see its top. You might, however, see the undersides of some sections that extend outward **(Figure 6.9).**

The horizon passes behind every person and every object in a setting *at the same height above the ground.* To create a believable illusion of deep space, you must be consistent in placing people and objects in correct relation to the horizon height.

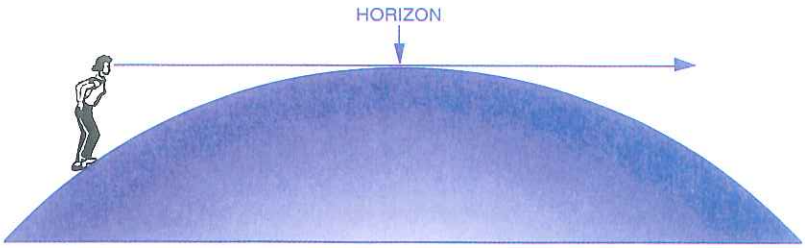


Figure 6.8 This little figure on a greatly reduced earth shows the curvature that causes us to see a horizon.

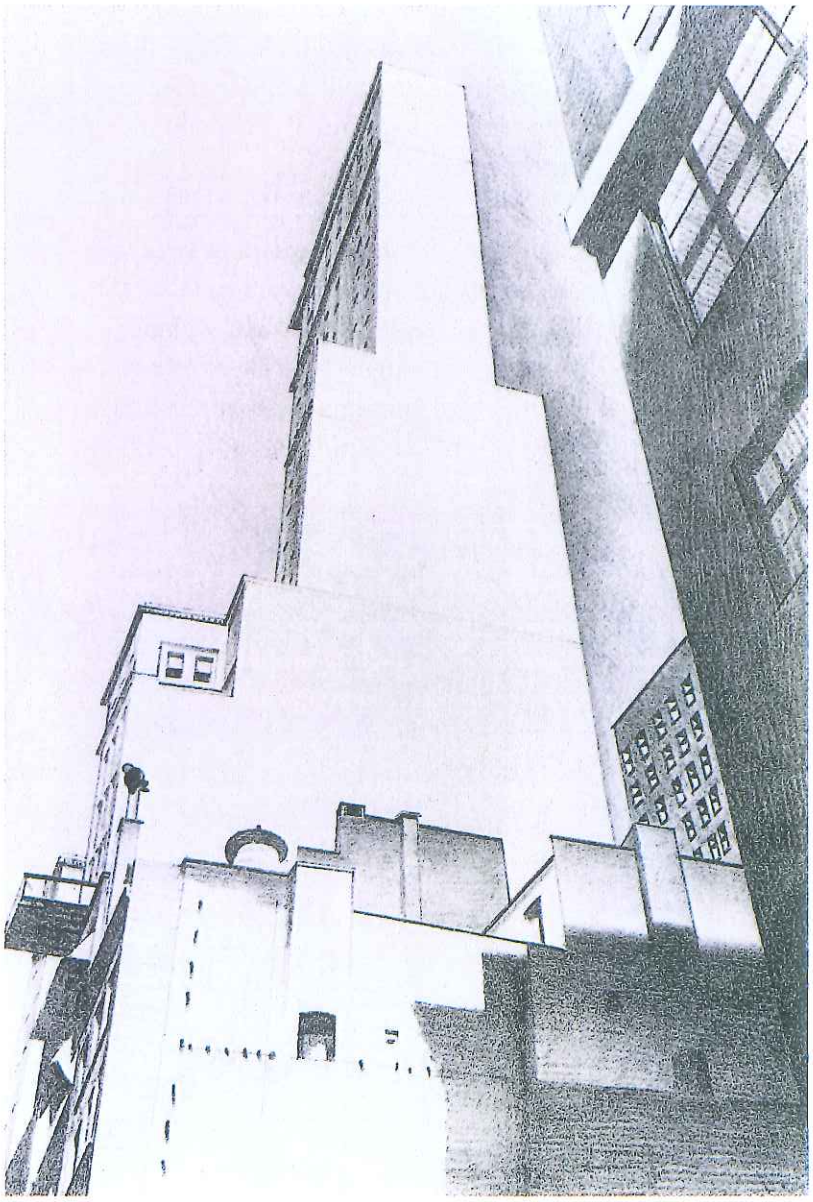


Figure 6.9 The view of these buildings is from a very low eye level. What does this point of view enable you to see?

Charles Sheeler. *Delmonico Building.* 1926. Lithograph. 25.4 × 18.1 cm (10 × 7⅛). Palmer Museum of Art, The Pennsylvania State University, University Park, PA.

Vanishing Points

A **vanishing point** is *the point on the horizon line, where receding parallel lines meet in a perspective drawing.*

Look at the diagram in **Figure 6.10.** Notice that the lines defining the top and bottom sides of the box in the center of the drawing are parallel to the edges of the picture, also called the picture plane. They are also parallel to the horizon and are called *horizontal* lines. These lines, if they were extended to either side, would never come together at any point along the horizon.

On the other hand, the parallel lines that form the right and left sides of the box, moving directly away from us at a 90-degree angle to the picture plane, would come together or meet at a point on the horizon line. This point is known as a central vanishing point, or center of vision. The box to the left of the center box is sitting parallel to it, so its receding lines will converge, or meet, at the same vanishing point.

The receding lines of the box on the right, however, meet at *two* vanishing points because none of this box's sides is parallel to the horizon. There can be as many vanishing points in a drawing as there are objects set at different angles to the picture plane or horizon. See **Figure 6.11** for an example of a drawing using several vanishing points. Which two boxes have edges that recede to only one vanishing point? Which two other boxes are sitting at the same angle?

Notice how perspective is used in the student drawing in **Figure 6.12.** The columns along the hallway and the line of trees recede toward one common vanishing point.

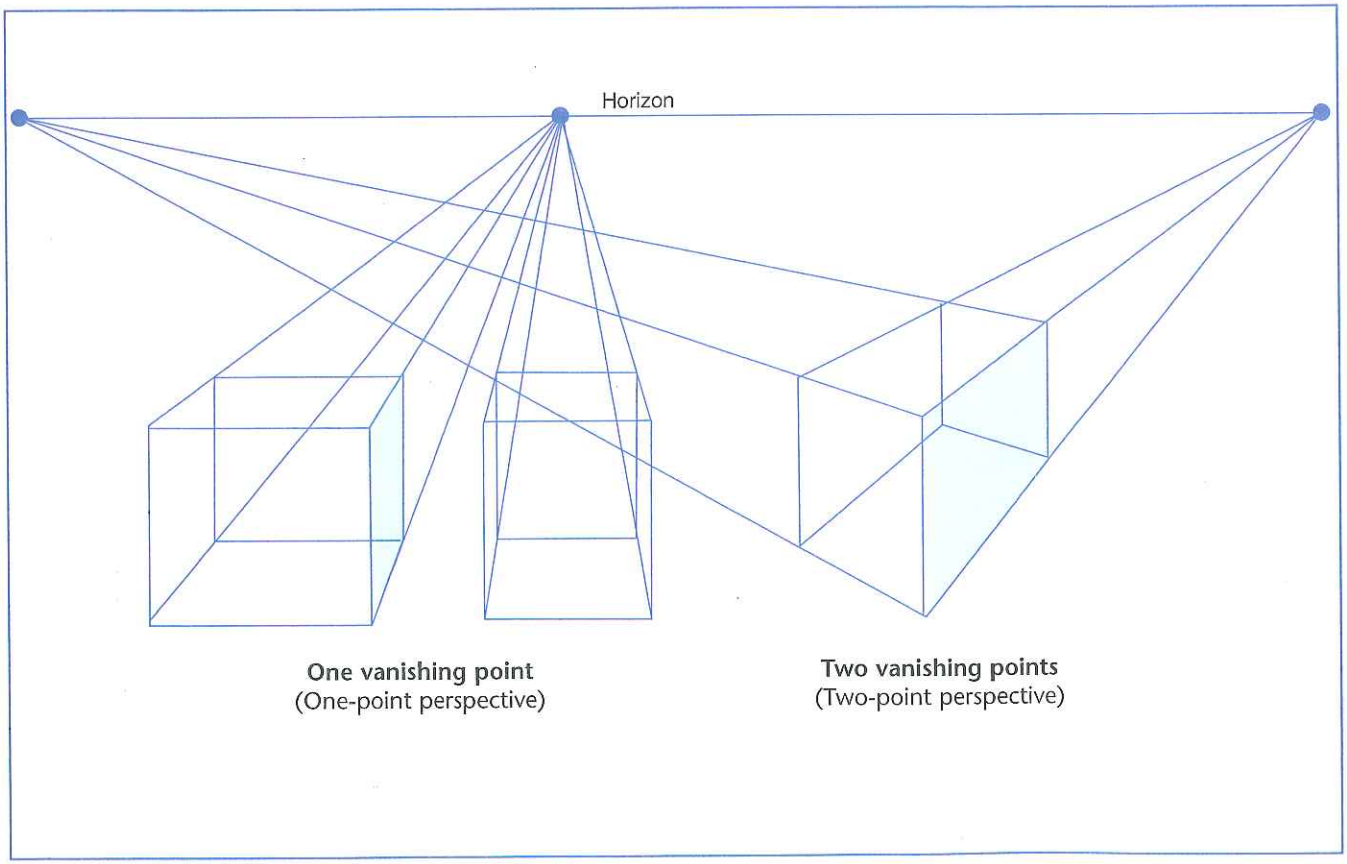


Figure 6.10 Two of the boxes are in one-point perspective, so they vanish to the same point on the horizon line. Turned at an angle to the picture plane and the viewer, the third box is in two-point perspective.

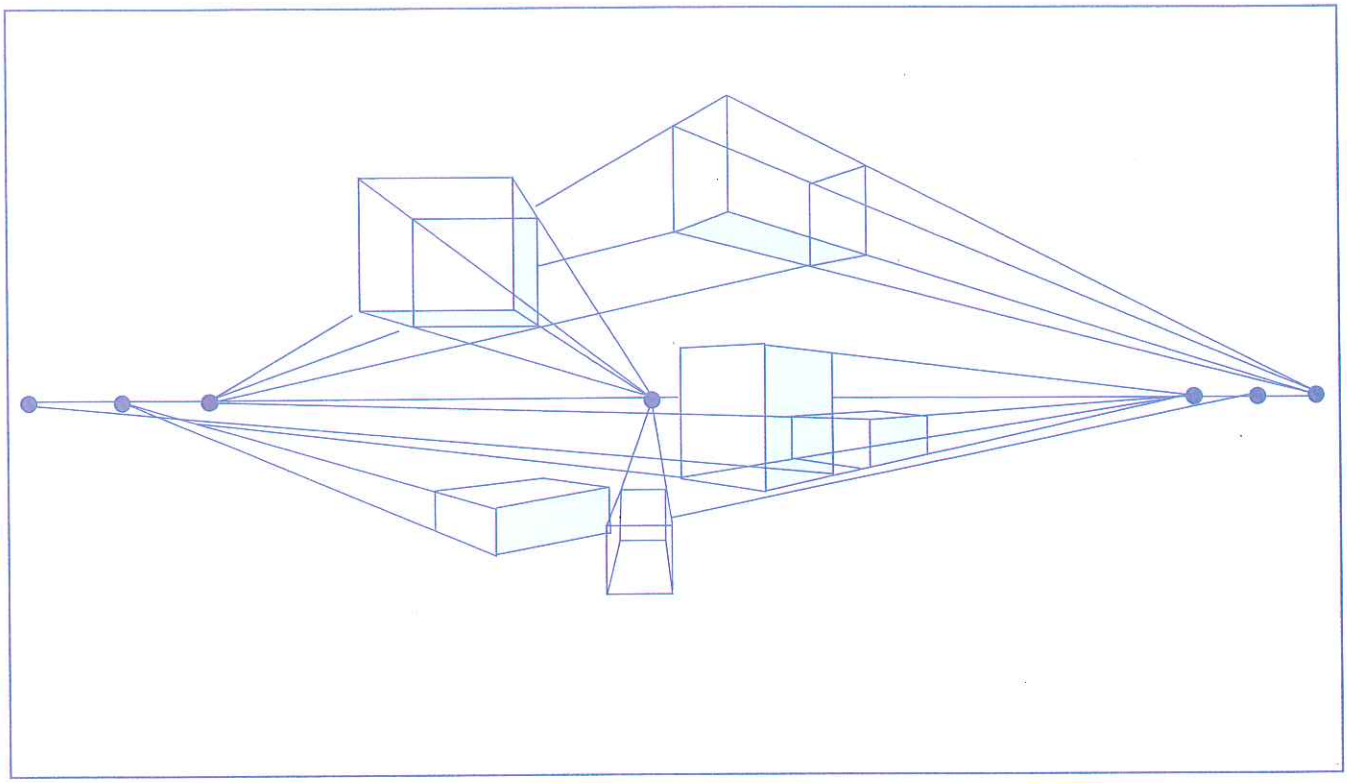


Figure 6.11 There can be as many different sets of vanishing points as there are objects at different angles to the viewer.

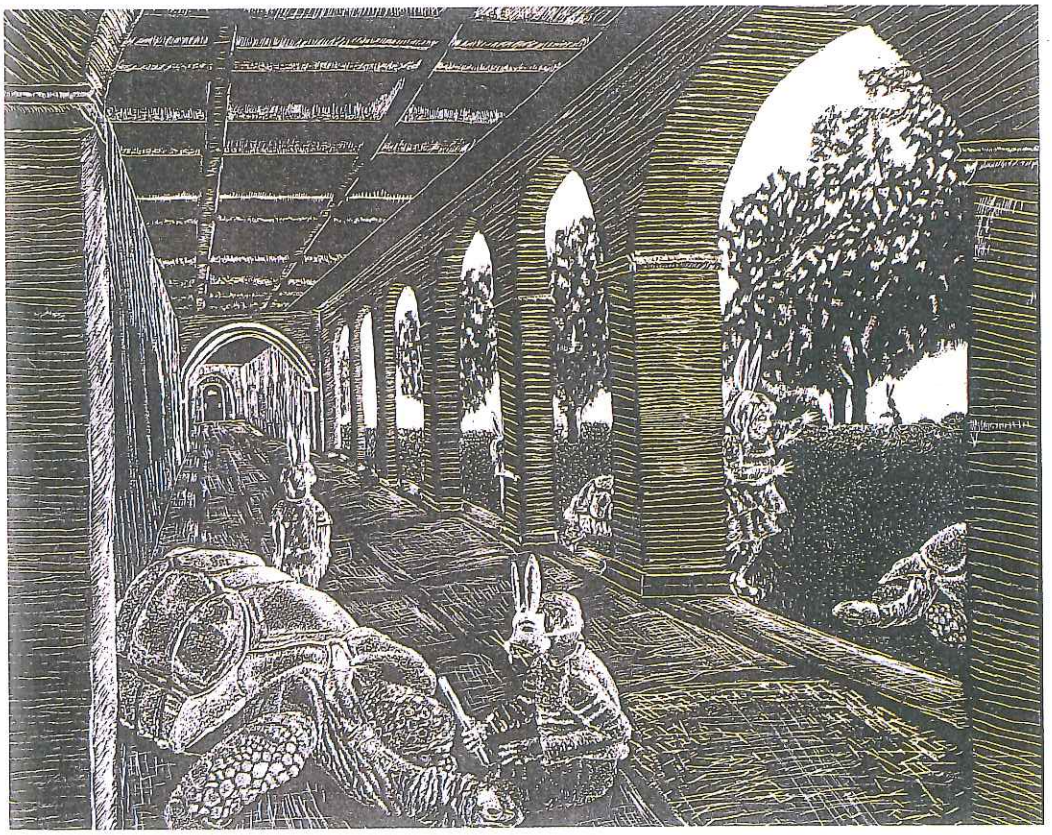


Figure 6.12 This student drawing makes use of one-point perspective to create a dramatic setting for some fantasy figures. What other techniques did the artist use to create the illusion of three-dimensional space?

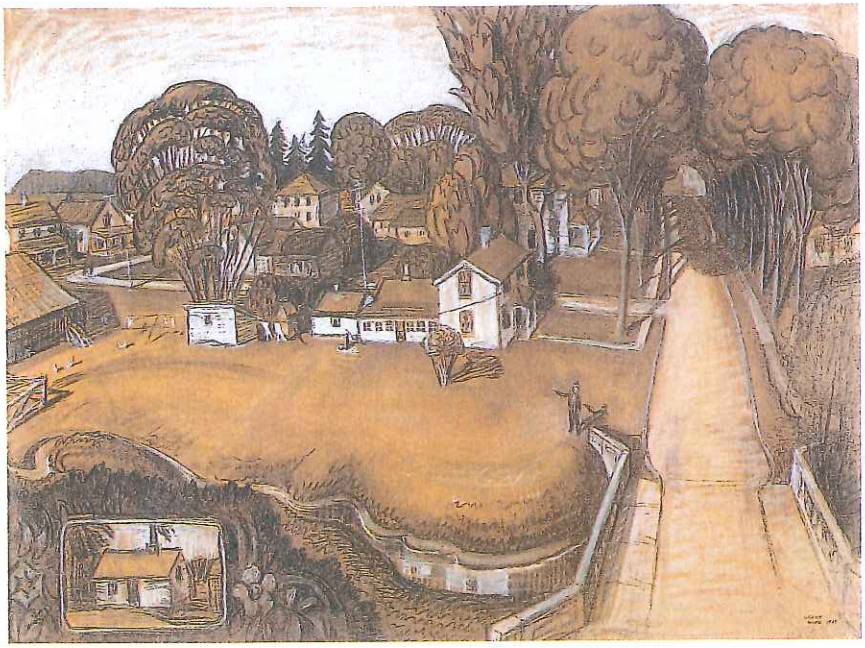


Figure 6.13 Observe how all the diagonal lines in this picture appear to recede into the distance. What name is given to the point where they all meet?

Grant Wood. *Sketch for the Birthplace of Herbert Hoover.* 1931. Charcoal, chalk, and pencil. 74.3 × 100.3 cm (29¼ × 39½"). © The University of Iowa Museum of Art, Iowa City, Iowa. Gift of Edwin B. Green in tribute to Nan Wood Graham, 1985.92. © Estate of Grant Wood/Licensed by VAGA, New York, NY.

ACTIVITY

Drawing a One-Point Perspective Scene

SUPPLIES

- Graphite pencil
- Art gum or other eraser
- Paper
- Ruler

Sit at one end of a hallway. Using an HB pencil, draw your horizon line at a height that is accurate to your eye level. If you are sitting on a ladder, the horizon line will be higher. If you are sitting on the floor, however, your line will be lower.

Observe how the top and bottom of the side walls converge as they move into the distance, or recede. The distant point where they would meet is their vanishing point. It will most likely lie beyond the end of the hallway. Mark that point, then draw the end of the hallway over it.

Draw in the walls, doors, and other objects in the hallway. Keep the front of the objects parallel to the horizon line. Use other graphite pencils to add texture, value, and other details. (See Figure 6.12 on page 99.)

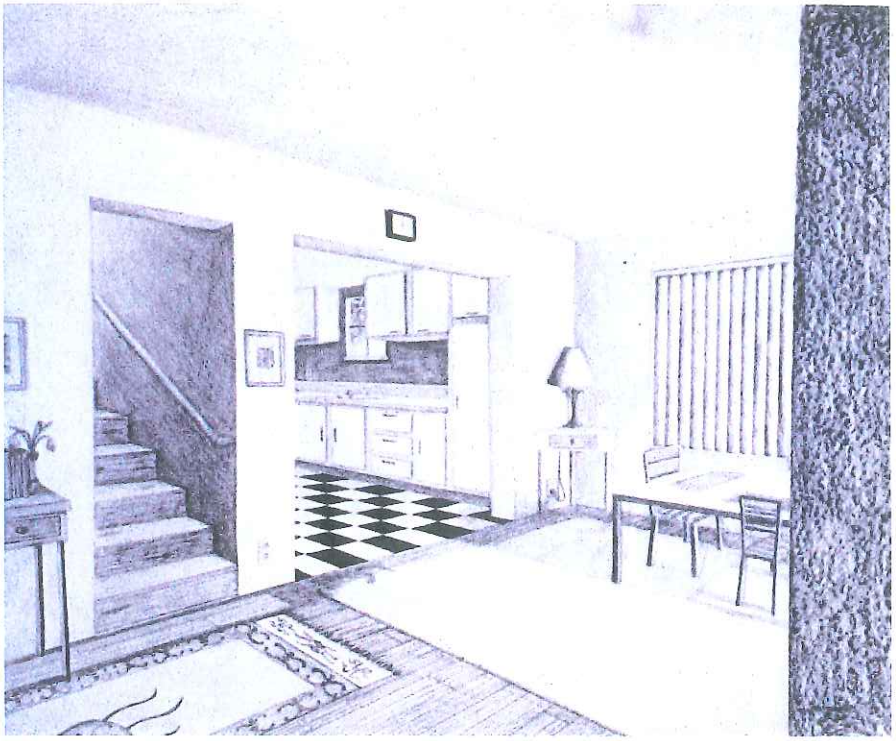
One-Point Perspective

The simplest kind of perspective is the kind you see if you are standing in the middle of a long, straight road, sidewalk, or railroad track. **One-point perspective** is *a technique for perspective in which the lines formed by the sides of the road, walk, or track seem to come together at a vanishing point on the horizon.* It is also known as parallel perspective. The vanishing point is at the center of vision. Notice how the lines converge in the drawing of the center box in Figure 6.11 on page 99. Notice also how the lines of the road in Grant Wood's drawing **(Figure 6.13)** converge in the same way.

One-point perspective was popular during the Renaissance period (Chapter 11, pages 213–214) and later with a group of twentieth-century artists called Surrealists (Chapter 11, page 230). It is also popular today with professionals such as interior designers because it allows them to make renderings for their clients that show three walls of a room's interior and its furnishings.

Two-Point Perspective

Look again at Figure 6.11 on page 99. Note that each box that isn't parallel to the horizon and picture plane, but shows a corner and two sides, has *two* vanishing points. Also, these vanishing points can't be used for any other box unless the two boxes are parallel to each other. Each of



➤ **Figure 6.14** This student artist was faced with the need to show a rather complex interior space. Why do think she chose to use two-point perspective?

these boxes is drawn in two-point, or angular, perspective. **Two-point perspective** is *a technique for perspective that shows different sets of receding lines converging, or meeting, at different vanishing points.*

Two-point perspective follows the same rules of perspective discussed thus far, but allows you to show two sides in addition to the top or bottom of a box. (Figure 6.10, page 98). The parallel edges or sides of the box still come together at a vanishing point located on the horizon line. The center of vision is no longer a single vanishing point, however. Because two sides of the box are visible, two vanishing points are needed.

To make a drawing of a box in two-point perspective, first draw the straight, vertical line representing the corner of the box closest to you. (See Figure 6.10 on page 98.) Remember to draw two vanishing points on left and right edges of the horizon line. The lines indicating the sides of the box can then be drawn from the two vanishing points to the top and bottom of this vertical line. Two diagonal lines from each vanishing point enable you to "cut the box off" wherever you wish. When those two lines are drawn, the top (or bottom) of the box is indicated. This technique can also be used to draw the interior of a room. Notice how a student used two-point perspective in **Figure 6.14.**

ACTIVITY

Drawing a Building in Two-Point Perspective

SUPPLIES

- Charcoal or soft graphite pencil
- Paper

Using two-point perspective—and your imagination—draw a unique house or building. Make certain that the building is rectangular and that the top of the building is shown above the horizon line. Begin by drawing the corner of the building nearest you and indicate lightly all the lines extending back to the vanishing points. The visible lines representing the sides and top of the building can be made darker later.

Because the top of the building will be above your eye level, the lines from the nearest corner will angle down to the vanishing points instead of up (as they did for the box you drew in the previous activity). After drawing the basic outline of the building, add doors, windows, and decorative details. Add trees, shrubs, fences, streetlights, or anything else to create a realistic setting for your building. Keep in mind, however, that everything must be drawn in correct perspective.

Three-Point Perspective

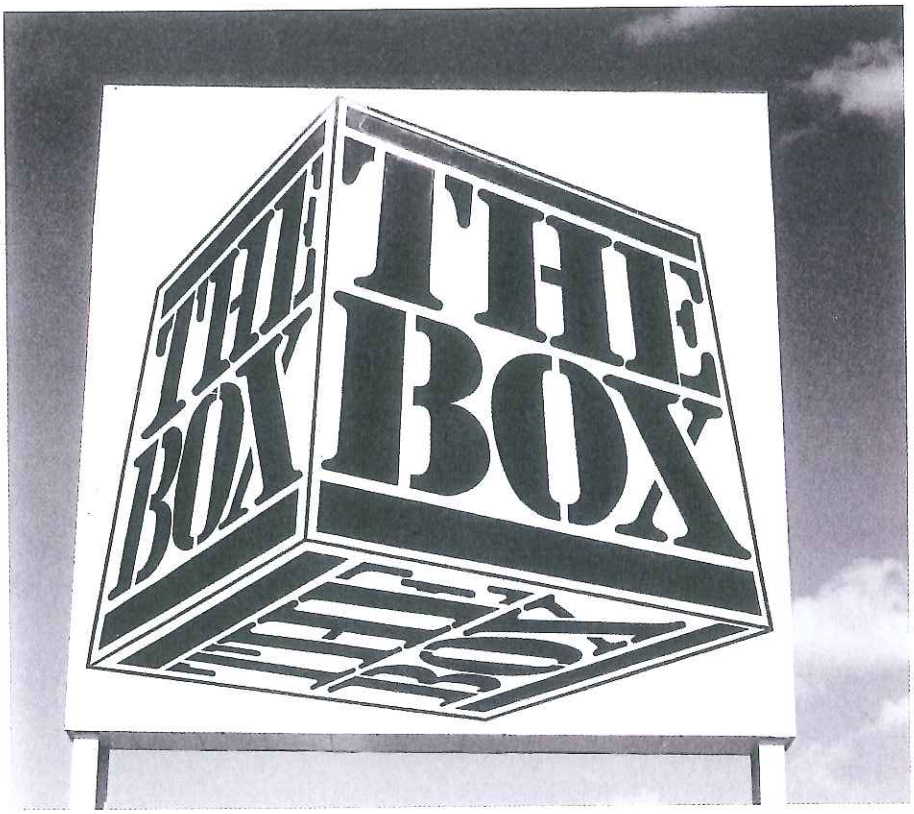
Three-point perspective is *a technique in which objects in a drawing have three vanishing points—two on the horizon and one above or below it.* This third vanishing point is called the vertical vanishing point. The use of this third vanishing point can aid efforts to make an object look even more three-dimensional. It can also be used to exaggerate or distort an object to increase its dramatic appearance.

Three-point perspective is commonly used when the viewer is looking at an object from below, as with the box on the sign in **Figure 6.15.** It is also used when the viewer is looking from far above it, as in M. C. Escher's (**eh**-shur) beautiful and mysterious drawing in **Figure 6.16.**

Remember that this means that the horizon line, which is at your eye level, is either very low or very high. You might use three-point perspective if you are at the bottom of a hill looking up at a church steeple or flying overhead in an airplane looking down at the buildings below.

If you lay a straight edge, or ruler, along each corner of the box in Figure 6.15, you will find that the edges, if extended, would converge at common vanishing points. Unlike in one- or two-point perspective, however, the *vertical* edges of the box will also converge at a vanishing point several inches above the box. Also, the vertical lines of the letters on the box will tend to come together at the same point. A third vanishing point in this picture emphasizes the height of the box and makes it appear more dramatic.

Now take your straight edge again and follow the same procedure with the Escher fantasy building in Figure 6.16. Does it also have a third vanishing point to make it more dramatic? Because the viewer is above the building, the vertical vanishing point is far below. Remember that in three-point perspective, the vertical vanishing points are not on the horizon but on a vertical line that is at a 90-degree angle (up or down) from the horizon. The vertical vanishing point is also usually in the center of the composition.



◀ **Figure 6.15** This box is on a sign in front of a store in Plainview, Texas. Identify three vanishing points.

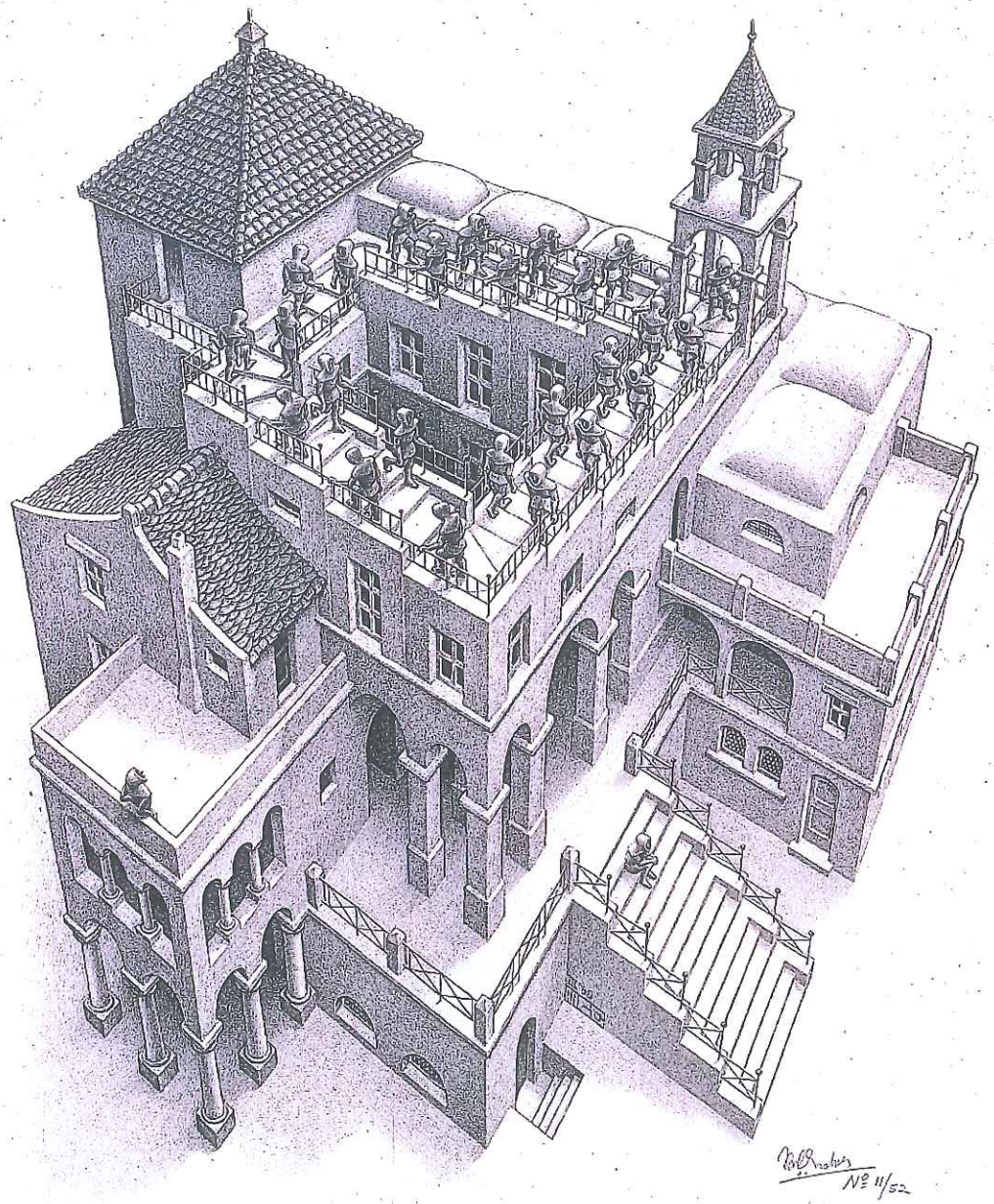


Figure 6.16 Escher is well known for works that make sophisticated use of visual illusion. In addition to perspective, what else has the artist done to create the illusion of a three-dimensional structure?

M. C. Escher. *Ascending and Descending.* 1960. Lithograph. 38 × 28.5 cm (15 × 11¼"). © 1999 Cordon Art B.V. —Baarn-Holland. All rights reserved.

Atmospheric Perspective

Atmospheric perspective is another technique used by artists to create the illusion of space by suggesting the effects of light and atmosphere on distant objects. It can be achieved in a work of art by gradually lightening the value when drawing objects that are farther away from the viewer.

For example, think about how distant mountains look in nature. They appear blue-gray and seem to disappear into the sky. This effect is caused by layers of atmosphere that exist between the viewer and the mountains. These layers of atmosphere are suspended particles such as dust, water vapor, and smog.

For an example of atmospheric perspective, look at the detail of a mural in **Figure 6.17.** This mural is one of the largest known india ink and wash drawings. A wash drawing is made with a brush and ink or paint thinned with water. Thinning wash is a good way to achieve value gradation.

This drawing demonstrates how both linear and atmospheric perspective can be used to create a lifelike scene. Notice how the values of objects gradually become lighter as your eye moves from the logs, rocks, and grass in the foreground to the distant mesas, or flat-topped mountains, at the far right. The more distant the objects, the lighter they are in value. Notice too how the mesas appear blurred and less distinct than the highly detailed objects in the foreground.

Figure 6.17 This detail of a remarkable ink and wash mural shows atmospheric perspective in the fading contrast of the distant mesas. Identify two other techniques used to create the illusion of three-dimensional space.

Peter Rogers. Mural. India ink and wash. Courtesy of the Museum of Texas Tech University, Lubbock, Texas.

Stippling

Stippling is one technique used to create atmospheric perspective. **Stippling** means *rendering light and dark gradations of value in a drawing by making a pattern of dots.* **Figure 6.18** is an example of a stippled drawing by a student. Notice how the man in the foreground stands out because he contrasts in value with the background bushes. Also observe the lack of contrast when comparing the background building with the snowy evening sky. This lack of contrast is another example of atmospheric perspective. Objects in the background, or farther away from the viewer, should be drawn with less contrast than the object in the foreground.

Figure 6.18 This student artist chose stippling to render atmospheric perspective in this evening snow scene.

Stippling makes it easy to render atmospheric perspective because you can work all over the drawing at once, adding more dots where they are needed. Remember, though, that it is easier to add dots than to remove them, so it is a good idea to make sketches to decide where to place darker values.

The stippling technique is not limited to drawings in which the artist is concerned with creating the illusion of space. For example, examine the stippling created with tempera paint in **Figure 6.19.**

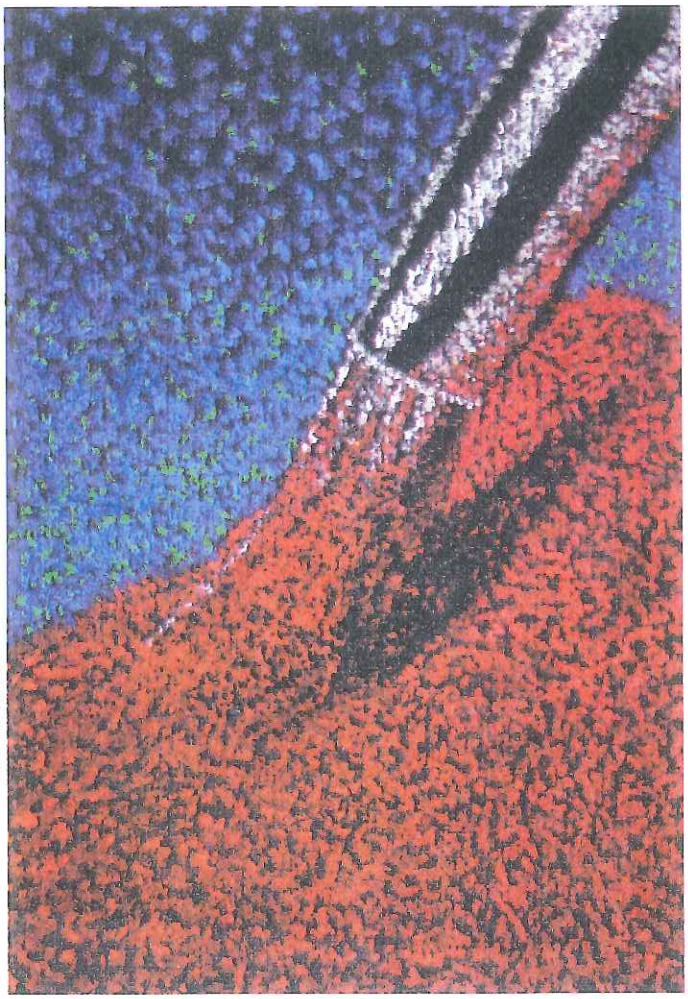


Figure 6.19 The student artist used dots of blue, red, and white tempera paint on black paper to create a richly textured image. Name at least one famous artist who made use of the same technique.

SHARPENING Your Skills

Stippling Techniques

Exploring Stippling Techniques. Stippling, like crosshatching (see Sharpening Your Skills, page 46), is a technique for creating value gradation, or different degrees of darkness. In this drawing, Camille Pissarro (ka-**meel** pea-**zhar**-roh) used a pattern of carefully placed dots.

When dots are spaced farther apart, they create areas of light value to suggest objects in the distance.

Dense patterns of tightly spaced dots are used to create dark or shaded areas.

Varying the spacing between dots creates gradual changes from dark to light values. This gives figures a solid, three-dimensional appearance.

Foreground figures stand out because a pattern of tightly spaced dots makes their shadow areas darker in value to contrast with the lighter values of figures behind.

Figure 6.20 Camille Pissarro. *Market Place in Pontoise.* 1886. Pen and ink on paper. 16.8 × 12.7 cm (6⅝ × 5″). The Metropolitan Museum of Art, New York, New York. Robert Lehman Collection, 1975. (1975.1.679). Photograph © The Metropolitan Museum of Art.