



▲ **FIGURE 10.1** This painting is a *fresco*. Italian for “fresh,” fresco is an art technique in which paint is applied to a fresh, or wet, plaster surface. Examine the size of the figures depicted in this fresco. Is this depiction always realistic?

Diego Rivera. *The Making of a Fresco Showing the Building of a City*. 1931. Fresco. 6.9 x 9 m (22'7" x 29'9"). Located at the San Francisco Art Institute, San Francisco, California. Gift of William Gerstle.

Proportion

You may be taller than some students in your art class, shorter than others. Distinctions like these involve proportion, or relative size. As an art principle, proportion can direct the viewer's eye to a specific area or object in an artwork.

In this chapter, you will:

- Explain and recognize the Golden Mean.
- Identify scale and proportion in artworks.
- Create visual solutions using direct observation to reflect correct human proportions.
- Compare and contrast the use of proportion in personal artworks and those of others.

Focus on Art History

Figure 10.1 was painted by the Mexican artist

Diego Rivera (1886–1957). At age 21, Rivera went to study art in Europe, where he met Paul Cézanne and Pablo Picasso. Returning to Mexico in 1921, Rivera rejected what he had learned. He chose instead to imitate the simplified forms of his pre-Columbian ancestors in Mexico. Rivera also became a champion of the rights of the working class. Social themes inspired him to create large mural paintings. His murals, which adorn the walls of public buildings, all have political or historical themes.

Analyze. The mural in Figure 10.1 shows scenes of urban construction. Notice the large male figure in the center. Form a conclusion about the meaning and historical context of this figure. Who or what does he represent?

Vocabulary

proportion
Golden Mean

The Golden Mean

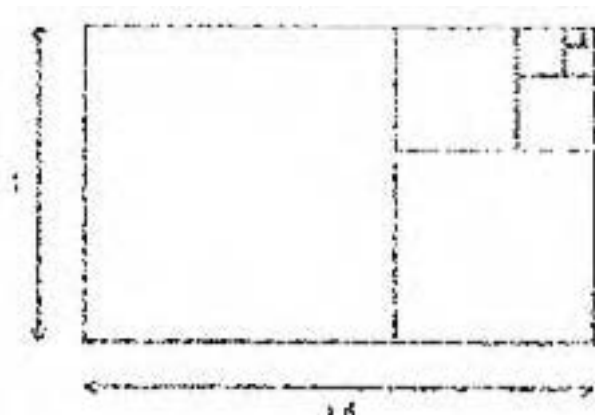
Through the ages, people have sought an ideal of harmony and beauty. One way they have tried to capture this ideal is through correct proportion. **Proportion** is *the principle of art concerned with the size relationship of one part to another*. Artists and architects have looked for a ratio (a mathematical comparison of sizes) that would produce an ideal form for figures and structures.

The ancient Greek philosopher Pythagoras found that he could apply mathematical equations to both geometric shapes and musical tones. If this was so, he thought, there must also be a way to explain other things—even the universe—in mathematical terms.

Euclid, a Greek mathematician, discovered what he considered a perfect ratio, or relationship of one part to another. He called this ratio the Golden Section, or **Golden Mean**, *a line divided into two parts so that the smaller line has the same proportion, or ratio, to the larger line as the larger line has to the whole line (Figure 10.2)*. With this ratio, the ancient Greeks felt they had found the ideal proportion. It was used to control the relationship of parts in their sculpture, architecture, and pottery. In math, this ratio is written 1 to 1.6 or 1:1.6.



▲ **FIGURE 10.2** The ratio of the Golden Mean is 1 to 1.6.



▲ **FIGURE 10.3** The Golden Rectangle is interesting to study. If you divide it into two shapes, one of which is a square, the remaining shape will always be a smaller Golden Rectangle. This new Golden Rectangle can be divided again and again.

The Golden Rectangle (**Figure 10.3**) had sides that matched this ratio. The longer sides were a little more than one and a half times as long as the shorter sides. This ratio was thought to be the most pleasing to the eye. If you look closely at Leyster's *The Concert* (**Figure 10.4**), you can see that the wall and the two figures on the right side of the work is a square, while the wall and the single figure on the left is the smaller section of the Golden Rectangle.

The Golden Mean is also related to the human figure. If you divide the average adult male body horizontally at the navel, the two body measurements that result (head to navel = a and navel to toes = b) have a ratio of 1 to 1.6 (**Figure 10.5**).

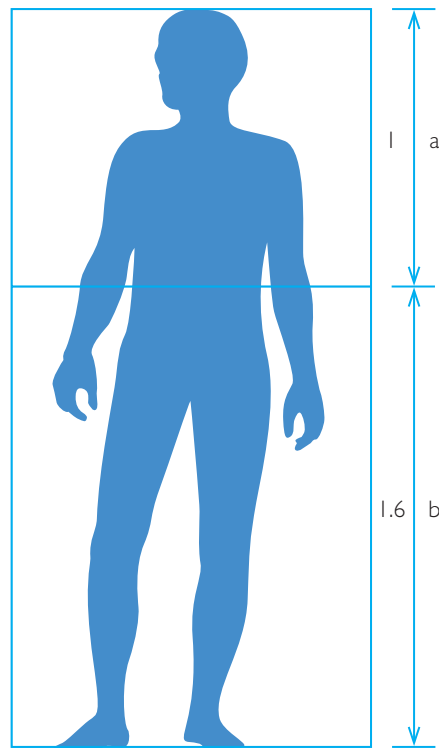


▲ **FIGURE 10.4** Judith Leyster has used the proportions of the Golden Mean to organize this painting. Look at the line dividing the back wall. The section on the right forms a perfect square. The section on the left is a Golden Rectangle. It can be divided just like the smaller section of the diagram in Figure 10.3.

Judith Leyster. *The Concert*. c. 1633. Oil on canvas. 109.2 × 167.6 cm (43 × 66"). The National Museum of Women in the Arts, Washington, D.C. Gift of Wallace and Wilhelmina Holladay.

The secret of the Golden Mean was forgotten with the fall of Ancient Greece. The ratio was rediscovered, however, during the Renaissance, and a book was written about it. This time the ratio was called the Divine Proportion, and it was thought to have magical qualities.

Since that time, some artists have chosen to use the Golden Mean as the basis for their compositions. Others, unaware of the mathematical ratio, used the Golden Mean just because that arrangement of parts looked good. Most artists now reject the idea that only this one rule can define the “correct” proportions for all works of art. The ratio, however, is found in visual art so often that it is hard to ignore its importance (Figure 10.6, on page 258).

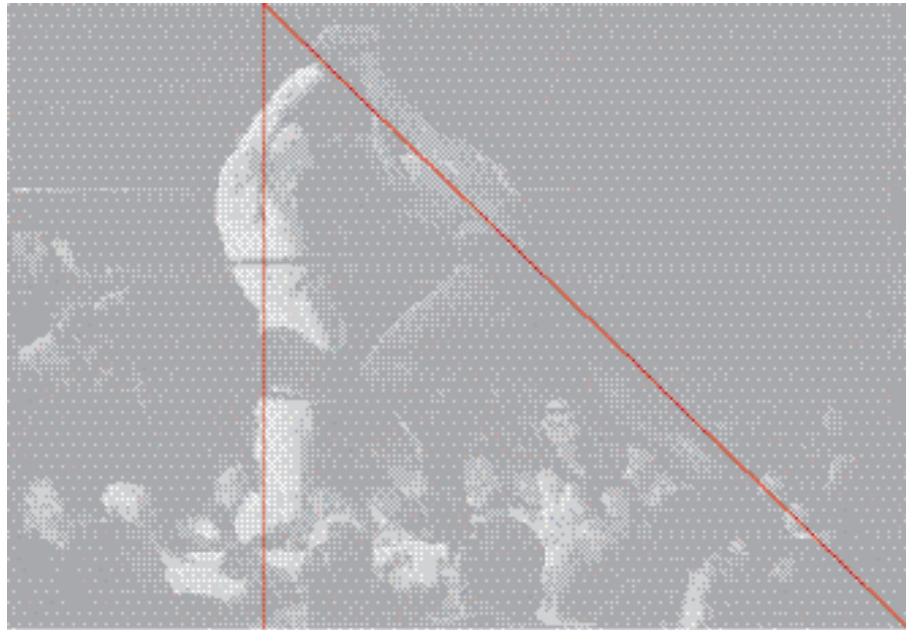


◀ **FIGURE 10.5** The relationship of the Golden Mean to the human body. Section a extends from head to navel and section b extends from navel to toes.

LOOKING CLOSELY

Using the Golden Mean to Organize an Active Painting

Notice how Bellows has used the Golden Rectangle and the diagonal of the square in the rectangle to give this action painting stability. He has used the vertical line for his standing figure and the diagonal line to help him place the leaning figure. Can you find the square in the small rectangle? Can you find any other artworks that use the Golden Mean? Many of them are very subtle and hard to notice.



◀ **FIGURE 10.6**

George Bellows. *Both Members of This Club*. 1909. Oil on canvas. 115 × 160.3 cm (45¹/₄ × 63¹/₈”). National Gallery of Art, Washington, D.C. © 1998 Board of Trustees. Chester Dale Collection.



▲ **FIGURE 10.7** Le Corbusier has been called the poet of the apartment house. This building has many of the features of a resort, such as a kindergarten and nursery, a roof garden, children's swimming pool, gymnasium, and snack bar. Lead sheets were placed between the walls to soundproof the apartments.

Le Corbusier. *Unité d'Habitation*. Marseille, France. 1947–52.

Many people looked to the human body as a source for perfect proportions. Artists during the Golden Age of Greece believed that the human body was the true expression of order. Statues created during that time were not realistic portraits of real people. The artists of the period showed the ideal form rather than the real form (see Figure 13.3, page 353).

In the first century B.C., Vitruvius, a Roman writer, determined typical ratios for human proportion. These were later used by Leonardo da Vinci and other Renaissance artists. The twentieth-century architect Le Corbusier (luh-kor-**boo**-see-ay) applied human dimensions to architecture and city planning (**Figure 10.7**).



Check Your Understanding

1. What is the Golden Mean?
2. Describe the Golden Rectangle.
3. What is the ratio of the Golden Mean?
4. How does the Golden Mean apply to the body?