Chapter 28

Florence: The Cradle of the Renaissance

What advances were made during the Renaissance?

28.1 Introduction

The Renaissance began in 14th-century Italy. In this chapter, you will visit the Italian city-state of Florence to learn about a number of advances made there during the Renaissance.

Florence is located on the Arno River, just north of central Italy. The city is often called the "cradle of the Renaissance." Between 1300 and 1600, it was home to some of the greatest artists and thinkers of the Renaissance.

During the Renaissance, Florence was—as it still is—a beautiful city. One of its most notable buildings is the cathedral of Santa Maria del Fiore with its towering duomo (duh-OH-moh), or dome. The cathedral was the center of the city's religious life. Nearby is the Palazzo Vecchio (VEK-ee-oh), or Old Palace. This building was the headquarters of the city government. The grand Palazzo Medici was the home of Florence's ruling family, the Medici. A more humble house was the Casa di Dante (kah-sah dee DAHN-tay), or Dante's House. Dante is one of Italy's most celebrated poets.

During the Renaissance, Florence was the banking center of Europe. People came to the Mercato Nuovo to trade their coins for florins, the gold coins of Florence. Another busy spot was the Ponte Vecchio. This beautiful bridge spanned the Arno River and, even today, is lined with the shops of fine jewelers and goldsmiths.

Florence's wealth helped to make it a leading cultural center of the Renaissance. In this chapter, you will explore Renaissance Florence's architecture and engineering, painting, sculpture, literature, science, and mathematics. You will also find out about Florentine politics, commerce, and trade.

The city of Florence, Italy, was the center of Europe's Renaissance.
28.2 The City of Florence

Florence was Italy’s leading cultural center during the Renaissance. The city was the birthplace of the great poet Dante Alighieri (ahl-ee-GARE-ee). The famed painter and sculptor Michelangelo grew up there. So did the brilliant thinker and artist Leonardo da Vinci. Other Florentines, such as the sculptor Donatello, also achieved great works of art, wealth, and fame during the Renaissance.

What factors helped Florence to become such a wealthy city? One answer is its location. Renaissance Italy was divided into city-states. Florence was one of them. The city’s location on the Arno River made it an important center for trade and commerce. Florence became the hub of woolen-cloth trading for all of Europe. In the early 14th century, Florence also became Europe’s banking center. About one hundred thousand people lived inside the city walls.

Renaissance Florence was dominated by a single family known as the Medici. The Medici acquired their wealth through banking. They helped Florence become the banking center of Europe.

Banking, along with the wool trade, created wealth that supported intense cultural activity in Florence. The city and its rich residents could afford to be patrons of talented artists and thinkers. The Medici family, for example, spent lavish sums on art. Their home was a gathering place for artists, such as Michelangelo, philosophers, and poets.

Over time, Florentines inspired still more creative activity. People learned from one another, and they sometimes competed to produce even greater works of art. Florentines were also influenced by ideas from other places. The city drew travelers from many parts of the world. Some came to do business. Some came to study art with Florence’s master artists. Others came to learn at the city’s schools and libraries. These visitors brought new ideas, goods, and technologies to the city.

Florentines were also inspired by the freedom of ideas that was at the core of humanism. Humanists prized the individual and tried to look with fresh eyes at nature and human society. You will see the influence of humanism throughout this chapter as you study examples of Renaissance advances.

28.3 Advances in Architecture and Engineering

Humanist scholars of the Renaissance were influenced by classical ideas. So, too, were architects and engineers. Renaissance architects studied Greek and Roman ruins. They modeled their own buildings on what they learned. They were particularly attracted to rounded arches, straight columns, and domed roofs.
Renaissance Architecture and Engineering  Renaissance architects also added their own ideas to classical building styles. During the Renaissance, wealthy families built private townhouses known as palazzi (pahl-AH-tzee), which is Italian for “palaces.” Many had shops on the ground floor and homes above. Most palazzi were built around a private courtyard, which might contain statues or other works of art.

Public spaces were often influenced by humanist ideals. For example, humanists valued good citizenship. Architects designed public buildings with outdoor plazas where citizens could gather in settings that were grand, yet welcoming.

Innovations in engineering made new kinds of architecture possible. One of the most impressive architectural feats of the Renaissance is Santa Maria del Fiore, the great cathedral in Florence. Florentines started building this eight-sided cathedral in 1296, but they had to leave an opening for the dome. At the time, they didn’t know how to build a sufficiently large dome that would not collapse. It took a Renaissance architect, Filippo Brunelleschi (feel-EE-poh broon-el-ES-key), to solve the problem.

The dome of Santa Maria del Fiore in Florence rises from the octagonal (eight-sided) cathedral. The dome’s design is one of the great engineering achievements of the Renaissance.
Building Florence’s Dome  Brunelleschi had studied ancient ruins in Rome. He had also learned about the mathematics involved in constructing buildings. The dome he designed for the cathedral took true engineering genius. It used no internal support beams or columns. Instead, eight huge stone arches met at the top of the dome and leaned against each other. Hoops of iron, wood, and brick wrapped around the arches, keeping them in place.

The magnificent dome was finished in 1436. It rose more than three hundred feet above the city. Santa Maria del Fiore, also known as the Duomo, still stands today, more than five hundred years later. From its top you can see most of the city of Florence.

28.4 Advances in Painting

Wealthy patrons made Renaissance Florence a thriving center of art. The Medici family spent huge sums of money on fine palaces, paintings, and statues. The Palazzo Medici was filled with works of art commissioned, or ordered, by the family. Patrons such as the Medici family created opportunities for talented painters, who made a number of advances in style and technique.

Renaissance painters were influenced by the renewed interest in classical culture and the spread of humanism. They wanted to depict real people who were posed in lifelike ways and whose faces expressed emotions. They also wanted to include realistic settings. The result was a new style of painting.
The Use of Perspective  One key advance made by Renaissance painters was the use of perspective. Painters use perspective to create the appearance of depth on a flat surface. Renaissance artists used several techniques to achieve depth. One was the size of objects. The smaller a painted object, the farther away it appears to be. The larger an object, the closer it appears to be. Painters also learned that a feeling of depth could be created by lines that came closer together as they receded into the distance. They discovered that careful shading could give figures and objects depth to make them look three-dimensional. Adoration of the Magi, a famous painting by Sandro Botticelli, shows some of these techniques.

The Influence of Science and Mathematics  Science and mathematics also helped artists make other advances. The Florentine artist Masaccio used geometry to figure out how to divide the space in a painting to make scenes appear more lifelike. Some artists studied anatomy. They observed bodies and how they moved. Their studies helped them to portray the human body more realistically.

Renaissance science gave painters new materials, such as oil-based paints. Oil paint was made by mixing powdered pigments with linseed oil. This type of paint was thicker and dried more slowly than the older, egg-based paint, so artists did not have to work so quickly. Oil paint also allowed artists to paint over previous work and to show details and texture in new ways.

28.5 Advances in Sculpture

Like painters, Renaissance sculptors were influenced by the humanist interest in realism. They were also inspired by ancient Roman statues dug up from ruins. Sculptors began carving figures that looked like real people.

For the first time since the days of ancient Greece and Rome, sculptors made freestanding statues that could be viewed on all sides. This was very different from the sculptures of medieval times. The new statues caused a sensation. They seemed to symbolize the humanist ideals of nature, realism, and the importance of the individual.

The Work of Donatello  A Florentine artist named Donatello was one of the first sculptors to use the new, more lifelike style. His work expressed personality and mood. A good example is his life-sized statue of David, the young warrior in the Bible story of David and Goliath. In the 1500s, Giorgio Vasari, an architect and painter, wrote that Donatello’s David is “so natural . . . it is almost impossible . . . to believe it was not molded on the living form.” This statue is thought to be the first freestanding statue since ancient times.
Michelangelo’s David (left) and La Pietà (right), are two of the world’s most-admired sculptures. The term pietà refers to any image of Mary holding the body of her son Jesus after his crucifixion.

The Work of Michelangelo Donatello’s sculpture influenced Michelangelo, another great artist of the Renaissance. Michelangelo is known for both his painting and his sculpture. He was also a talented poet and architect. Of all these arts, he preferred sculpture because it seemed to bring his subjects to life.

Michelangelo created his own majestic statue of David. It may be the world’s most widely admired sculpture. Carved in white marble, Michelangelo’s David stands about seventeen feet tall. The statue’s expression shows the concentration and tension of a real youth on the verge of battle.

Michelangelo’s David was installed in the Piazza della Signoria, the plaza in front of the Palazzo Vecchio. It became the prized expression of Renaissance genius in Florence, and Michelangelo had an enormous influence on other artists.

28.6 Advances in Literature

During the Renaissance, literature also was changed by the rebirth of interest in classical ideas and the rise of humanism. The topics that people wrote about changed. So did their style of writing and the language in which they wrote.

New Topics and Styles of Writing In medieval times, literature usually dealt with religious topics. Most writers used a formal, impersonal style, and wrote in Latin. Their work could be read only by a few highly educated people.
In contrast, Renaissance writers were interested in individual experience in the real world. Writing about secular, or nonreligious, topics became more common. Writers used a more individual style, and expressed thoughts and feelings about life. Most importantly, by the end of the Renaissance, most writers were writing in their own languages, instead of in Latin. As a result, far more people could read their work.

**Dante and The Divine Comedy**  The first well-known writer to create in a native language was Dante Alighieri (DAHN-tay ahl-ee-GAIR-ee) of Florence. He wrote his best-known work, *The Divine Comedy*, in Italian in the early 1300s. This long poem describes Dante's imaginary journey through the afterlife. With the spirit of the ancient Roman poet Virgil as his guide, Dante witnesses the torments of souls condemned to the *Inferno*, which according to Christian belief is the place of punishment after death for one's sins. Virgil also takes Dante to *Purgatorio*, which according to Catholic tradition is a place where souls await entry into heaven. Then a beautiful woman named Beatrice shows Dante *Paradiso*, or heaven, which according to Christianity is a place of eternal life.

*The Divine Comedy* is a social commentary. It contains characters who were real people. The inhabitants of the *Inferno* include people of whom Dante disapproved. People he admired appear in *Paradiso*.

Dante's work became a model for other Renaissance writers, such as Petrarch and Boccaccio. They described people's lives with a new intensity of feeling. Like Dante, they wrote using the vernacular, or native language, so their words reached many more people.

Dante Alighieri, a Renaissance author in Florence, wrote a long narrative poem called *The Divine Comedy.* This plaque in Florence shows Dante with scenes described in his poem. The city of Florence is shown on the right.
28.7 Advances in Science and Mathematics

The Renaissance was not just a time of progress in the arts. Scholars and others also made great advances in science and mathematics.

Before the Renaissance, most of what people believed about the natural world was based on ideas in ancient Greek and Roman texts. As the humanist spirit took hold, people started questioning old ideas. They began carefully observing the world around them. Instead of relying on old books and theories, scientists began to perform experiments. They analyzed the results using mathematics and logic. This approach to research changed the study of science.

Leonardo da Vinci  One of the most creative Renaissance thinkers was Leonardo da Vinci. Leonardo was an artist, a scientist, an engineer, and an inventor. He studied under artists in Florence and did his early work there.

Leonardo da Vinci studied many topics, including human anatomy. These sketches of the muscles of the arm are from his notebooks.
Leonardo was endlessly curious about all aspects of the world around him. He did not accept anything as true until he had proved it himself. In his notebooks, he made sketches and wrote about an amazing variety of topics. He wrote about geometry, engineering, sound, motion, and architecture. He studied anatomy, including the circulation of blood and the workings of the eye. He learned about the effects of the moon on Earth's tides. He was the first person to draw maps from an aerial, or above-ground, view. He designed bridges, weapons, and many other machines. Among his many farsighted ideas were an underwater diving suit and a helicopter.

Paving the Way for Modern Science and Mathematics
Other Italian scientists and mathematicians made breakthroughs, as well. Girolamo Cardano solved complex equations in algebra. Cardano did pioneering work in probability, the science of chance. Galileo Galilei conducted important experiments about gravity. He proved that a heavier object and a lighter object fall at the same rate. If the two objects are dropped from the same height, they reach the ground at the same time. Galileo also built the first telescope used to look into space. With his telescope, he was able to discover sunspots and the moons of the planet Jupiter. By emphasizing observation and experimentation, Galileo and other Renaissance scholars paved the way for modern science and mathematics.

28.8 Florentine Politics
The local government of Florence was housed in the Palazzo Vecchio, or Old Palace. Like other Italian city-states, Florence was ruled under a series of governing boards. These boards were often controlled by rich families. The powerful Medici family controlled Florence for nearly three centuries.

The Medici Family  The Medici maintained their power in a number of ways. With their vast wealth, they built palaces and were able to maintain a strong army. They were involved in or controlled all aspects of life in the city. They were great sponsors of artists, writers, and musicians, whose works beautified Florence and made the city famous. The Medici also were constantly watchful for enemies who plotted against the family.

One of the most powerful members of the Medici family was Lorenzo the Magnificent. A leading patron of art and scholarship, Lorenzo ruled Florence for more than twenty years, from 1469 until his death in 1492. Two years later, a revolution forced the Medici into temporary exile. In 1512, the family regained power.
The Procession of the Magi is a fresco in one of the Medici palaces. It includes images of three generations of the powerful Renaissance family.

Niccolò Machiavelli, a Renaissance statesman and historian who wrote The Prince

A Book About Politics  A Florentine statesman and historian, Niccolò Machiavelli (mahk-ee-uh-VEL-ee), watched these struggles for power. During the Medici’s exile, he reorganized the city’s defenses. He also served as a diplomat and spent time observing the actions of other Italian rulers.

Machiavelli used his experiences to write a book called The Prince. The book is his account of how politics and government really work. Machiavelli advises rulers to make their states strong by doing what works best, rather than by doing what is good or moral. He said that they should even lie if it helps them to rule. In his view, the end, or purpose, justifies the means—the actions taken to achieve that purpose. Rulers, he wrote, should be feared rather than loved.

The Prince seems to contradict humanist ideals about people’s goodness. Its cold realism shocked many readers of the time. Yet in other ways, the book shows the influence of humanist ideas. It is the product of one individual’s careful observation and thinking. It is concerned with how things really work in the world. It also separates ideas about government from ideas about religion. In this respect, The Prince is a very modern work.
28.9 Florentine Commerce and Trade

One reason why Florence became a cultural center was the wealth that trade and commerce brought to the city. A thriving banking industry developed. Over time, Florence became Europe’s banking hub, and richer than the largest kingdoms in Europe. Popes and kings alike borrowed money from its 80 banks.

There were two market centers in Renaissance Florence. At the Mercato Vecchio, or Old Market, people bought everyday items, such as food. The Mercato Vecchio was crowded and noisy. People from all over Europe came there to buy and sell goods.

The Mercato Nuovo, or New Market, was built in the mid-1500s as a center for the city’s cloth and banking industries. City officials banned food and weapons there. They wanted it to be clean and orderly to show that commerce was highly valued in Florence.

The Mercato Nuovo became one of the largest financial marketplaces in Europe. People traveled from far and wide to get loans or to convert their money into florins, which could be exchanged for goods anywhere in Europe.

Chapter Summary

In this chapter, you visited Renaissance Florence to learn about advances that were made there in a number of fields.

The City of Florence Florence was the leading culture center of the Renaissance. Many Renaissance figures were born or grew up there. Located on the Arno River, the city also became a business center. Florentines used their wealth to support the arts and education.

Advances in Architecture and Engineering Renaissance architects and engineers studied Greek and Roman structures. They created new works based on classical styles, but were influenced by humanism and their own ideas. Brunelleschi’s cathedral dome is a lasting symbol of Renaissance achievements in architecture and engineering.

Advances in Painting, Sculpture, and Literature Renaissance humanism also influenced artists, such as Donatello and Michelangelo, and writers, such as Dante. They created works based on experience in the real world. Dante was the first major writer to use the vernacular.

Advances in Science and Mathematics Renaissance thinkers began to experiment and use mathematics and logic to analyze the world. Figures such as Leonardo da Vinci and Galileo emphasized direct observation, paving the way for modern scientific methods.

Florentine Politics, Commerce, and Trade The powerful Medici family controlled Florence for nearly three centuries, and were involved in all aspects of the city’s life. Niccolò Machiavelli used his experience and observations of Florentine politics to write The Prince. Under the Medici, the city became Europe’s banking hub. The Mercato Vecchio and the Mercato Nuovo became two major centers of European trade and commerce.