

*Galileo first used the telescope to search the night sky. His discoveries changed the way people thought about the universe.*

- Explain what the word *Renaissance* means.
- Tell how the invention of movable type helped in the spread of knowledge.
- Name four important people of the Renaissance.
- Explain what the Reformation was.
- Name two leaders of the Reformation.

### Learning Objectives



# New Ideas: The Renaissance

## Words to Know

Renaissance	the revival of art, literature, and learning in Europe in the fourteenth through sixteenth centuries
scholar	a person who has learned much through study
humanism	a concern with the needs and interests of human beings rather than religious ideas
patron	a wealthy person who supports artists
sculptor	a person who makes statues out of wood, stone, marble, or other material
astronomy	the study of stars, planets, and other heavenly bodies
pendulum	a weight hung so that it swings freely back and forth; often used to control a clock's movement
theory	an explanation of how and why something happens, usually based on scientific study
reform	to change for the better
protest	to speak out against or act against something
heretic	a person who is against the teachings of a church

During the Middle Ages the culture and learning of the Greeks and Romans were all but forgotten. For many people it was as if Greece and Rome had never existed. For this reason the Middle Ages, especially the early part, is sometimes called the Dark Ages.

During the Middle Ages, Christianity united the people of Western Europe. This was not, however, a uniform faith. Great universities were founded. Immense

## THE HUMANISTS

Humanists were scholars whose main interest was in human beings. They began to question the church and its leaders. A Dutch scholar, Erasmus, eyed the church critically.

"It seems," Erasmus decided, "that the church is more concerned with wealth and power than with helping men find God."

Erasmus wrote books that questioned the church's practices. He believed that simple ways were best. There was too much ritual and ceremony in the church, he said. Erasmus was a humanist. He believed that if people were just shown what was right, they would live that way. Erasmus was among the first Renaissance scholars to criticize the church. However, he certainly was not the last.

## Learn More About It

The Renaissance was a period of great thinking. The Renaissance lasted about 200 years.

## HISTORY FACT

The Renaissance was a time of new ideas. During the Middle Ages the Catholic Church was all-powerful. Thinking centered on God. Most scholars were also people of the church. During the Renaissance, people began to think about themselves as well as about God. People used to worry about whether or not they would go to heaven after they died. Now they thought more about making a good life on earth. This new belief in the importance of human beings became known as **humanism**. The spirit of humanism sparked new ideas in art, in science, in literature, and in philosophy.

cathedrals were built. Toward the end of the Middle Ages, around A.D. 1300, trade and travel increased. New ideas exploded throughout Europe. The period after the Middle Ages became known as the **Renaissance**. Renaissance means "rebirth" or "awakening."

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## Renaissance Art

The Renaissance began in Italy. Then it spread northwest across Europe. More and more people began to appreciate beautiful things. The work of Italian craftworkers became very fine. People thought of it as art. Europeans showed a new interest in the civilizations of ancient Greece and Rome.

"Perhaps," people said, "that is when civilization was as its best!"

"Look at the art that came out of Greece," they said. "Look at the beautiful statues and the paintings. Look at the fine architecture of the Romans." At first Italian artists tried to copy the work of the ancient Greeks and Romans. Then they began to improve on it.

During the Middle Ages most paintings were of religious scenes. The people in these pictures were not very lifelike. Renaissance artists studied the human form. They tried to make the people in their pictures look more like real people. For the first time, artists used live models.

Craftworkers could make a good living from their work. It was harder for artists to earn a steady wage. Wealthy Italians served as **patrons** for promising young artists. A patron provided food, housing, and enough money for the artist to live on. Because of their patrons, artists were able to work and study to improve. Some of the world's finest artists lived during the Renaissance.

## Michelangelo Buonarroti

One of the most famous artists of the Italian Renaissance was Michelangelo Buonarroti. During the Renaissance, people were encouraged to be good at many things. Michelangelo, in true Renaissance spirit, was more than just a fine painter. He was also a **sculptor**, a poet, and an architect.

### HISTORY FACT

The spirit of humanism led Renaissance artists to make the people in their pictures lifelike.

One of Michelangelo's most famous works is the sculpture, *Pieta*.



Michelangelo's patron.

noticed Michelangelo's brilliance. He became a young boy. A wealthy Italian, Lorenzo de' Medici, town in Italy. He began showing artistic talent as a Michelangelo was born in A.D. 1475 in a mountain town in Italy. He began showing artistic talent as a lifelike. Each muscle is perfect. Each position is totally real. Each muscle is perfect. Each position is totally lifelike. This helped him understand the human form at work and at rest. Michelangelo even studied dead bodies. His sculptures seem alive and lines of bone and muscle. His sculptures seem alive and real. Each muscle is perfect. Each position is totally lifelike.

Michelangelo earned his greatest fame for his sculptures. He studied the human body. He studied the human form at work and at rest. Michelangelo even studied dead bodies. This helped him understand the lines of bone and muscle. His sculptures seem alive and real. Each muscle is perfect. Each position is totally lifelike.

At age 24 Michelangelo created his first masterpiece, a huge statue called the *Pietà*. Michelangelo sculpted it for St. Peter's Church in Rome. In the *Pietà*, the body of Christ is shown held in his mother's arms. The word *Pietà* came from the Italian word for pity.

Michelangelo's statue *David* is another of his most famous works. Completed in 1504, it is a perfect example of the Renaissance interest in the human form. "David" is strong and looks alive. The statue is 18 feet high and made of solid marble. Michelangelo's *David* is very heavy. It took 40 men to move it from the workshop to a central square in Florence, Italy.

Pope Julius II hired Michelangelo to paint the ceiling of the Sistine Chapel in Rome. Michelangelo painted a series of pictures showing events in the Bible. Over 300 figures from the Bible appear on the 60-foot-high chapel ceiling. Michelangelo had to paint the scenes lying on his back. He lay on a platform held by ropes. He worked on that ceiling for four years.

Later in his life, Michelangelo turned to architecture. He worked on the rebuilding of St. Peter's Church. He took no pay then. He believed it was a task that would please God.

Michelangelo died when he was 90. He had had a long life in which to sculpt, to paint, and to build. His art brought light and beauty to all of Europe.

## Education and Learning

All writing was done by hand during the Middle Ages. Books were copied on parchment made of animal skin. Therefore, books were beautiful, but they were also expensive and few in number. Only wealthy people could own books of their own. Most books were written in Latin, the language of the church. The only scholars were clergy. The church was the main place where studying went on. The church dominated all learning.

### Remember

Latin, the language of ancient Rome, became the language of the church. Rome was the first place that made Christianity its official religion.

Then, about A.D. 1450, things started to change. Secrets of making paper were brought to Europe from China. They were introduced by the Moors, or Spanish Muslims. Then a new invention eventually made books available to everyone! A German printer named Johannes Gutenberg discovered how to use movable type for printing.

With movable type, letters were molded onto small metal blocks. The letters could be moved around to spell different words. When inked and pressed onto paper, the movable type printed a whole page at one time.

Now books could be made quickly at low cost. Now many people could read the stories of the Greeks and Romans and tales of travel. The ideas of the past and the present were widely available. Books were translated into the languages of the common people, not just that of Latin scholars.



*Johannes Gutenberg's printing press made written information available to people.*

With the *Gutenberg Bible* Europeans could read the Bible for themselves. People did not have to rely on the church to tell them what the Bible said. The Bible was translated into English, Italian, French, and German.

It became important to be able to read. More schools opened. Schools that taught Greek and Latin grammar were called “grammar” schools. There were new universities. Studies went beyond religious thought. People studied the world. They also studied about their own place in the world.

### HISTORY FACT

The famous *Gutenberg Bible* was not discovered until 1760. It was found in Paris.

## Science and Invention

The Renaissance was a time for progress. There were some important changes during the Middle Ages. However, change had come slowly. Now new books—and new ideas—were available for anyone who could read. Universities were growing. With the spirit of the Renaissance, change came rapidly.

People explored new ideas. Gutenberg’s printing press was just one of the new inventions. Inventors discovered how to make springs. Then they made watches that were small enough to be carried in a pocket. Before, the only clocks had been huge ones on public buildings. Now people could keep time at home.

New instruments helped sailors find their way on the open seas. New maps improved travel. People experimented with metals. Soon they came up with cast iron to replace expensive bronze.

In medicine, the English doctor William Harvey discovered that the heart pumps blood throughout the body. In 1600 the microscope was invented. It led to a new look at the world. Suddenly people learned that there were tiny creatures—smaller than the eye could see!

## The Center of the Universe

Some of the greatest scientific discoveries of the Renaissance came in the field of **astronomy**. These new ideas changed people's thinking in many ways. Not only were there new ideas about the way the Earth and stars moved. Now there was also a new way of seeing humanity's place in the whole system. These ideas shook up the scientific world and shook up the church.

For hundreds of years people had believed that the Earth was the center of the universe. They believed that the sun, moon, and stars all moved around the Earth. Then in 1543 the Polish astronomer Nicolaus Copernicus wrote a book. He said that the planets, including the Earth, revolve around the sun.

Most people would not believe him!

## Galileo Galilei

The invention of the telescope challenged more old ideas. Now scientists could get a better look at the sky. An Italian scientist, Galileo Galilei, took up where Copernicus had left off. Galileo was born in Pisa in 1564. He made his first important scientific discovery at the age of 20. Galileo watched a great lamp swing from the ceiling of the cathedral in Pisa. Then he came up with the idea of the **pendulum**.

Later, he discovered the "law of falling bodies." Galileo found that gravity pulls all bodies to the Earth at the same speed, no matter what their weight. Galileo climbed to the top of the Leaning Tower of Pisa to prove his **theory**. Then he dropped a ten-pound weight and a one-pound weight. He showed that they both hit the ground at the same time.

### You Decide

Why do you think people were not willing to believe Copernicus?

Some people were angry. They were shocked that Galileo would dare to challenge the ideas of the wise Greek, Aristotle. Galileo's discoveries would bring him a lot of angry words.

The invention of the telescope brought another breakthrough. Galileo was not its inventor, but he was the first to use the telescope to study the heavens. With his telescope, Galileo discovered that the moon did not have its own light. It reflected light. He discovered moons around Jupiter and the mass of stars in the Milky Way. All of Galileo's discoveries led him to support Copernicus's theory. The Earth was not the center of the universe. The Earth was just another planet revolving around the sun!

No matter how well Galileo proved his theory, the church would not hear of it. Church members were ordered not to read Galileo's books. The church sent Galileo warnings. He was not to teach his theories. In 1632 Galileo was called to a church hearing. There was a long trial. Galileo had to promise that he would give up his belief in Copernicus's theory. The church forced him to say that the Earth was the center of the universe. Church officials watched Galileo closely for the rest of his life. He became a prisoner in his own home.

### Check Your Understanding

Write your answers in complete sentences.

1. What is the meaning of the word *Renaissance*?
2. Why were Michelangelo's sculptures so lifelike?
3. What is the name of the famous ceiling that Michelangelo painted?

1. *Renaissance* means rebirth or awakening.
2. He studied human form at work and rest. Each muscle and bone is perfect, each position is life-like.
3. Michelangelo painted the ceiling of the Sistine Chapel in Rome.

## The Renaissance Man

The great artists, writers, and scientists of the Renaissance had many kinds of knowledge, talents, and skills. Michelangelo could paint, sculpt, write poetry, and build. Galileo studied medicine, physics, and astronomy.

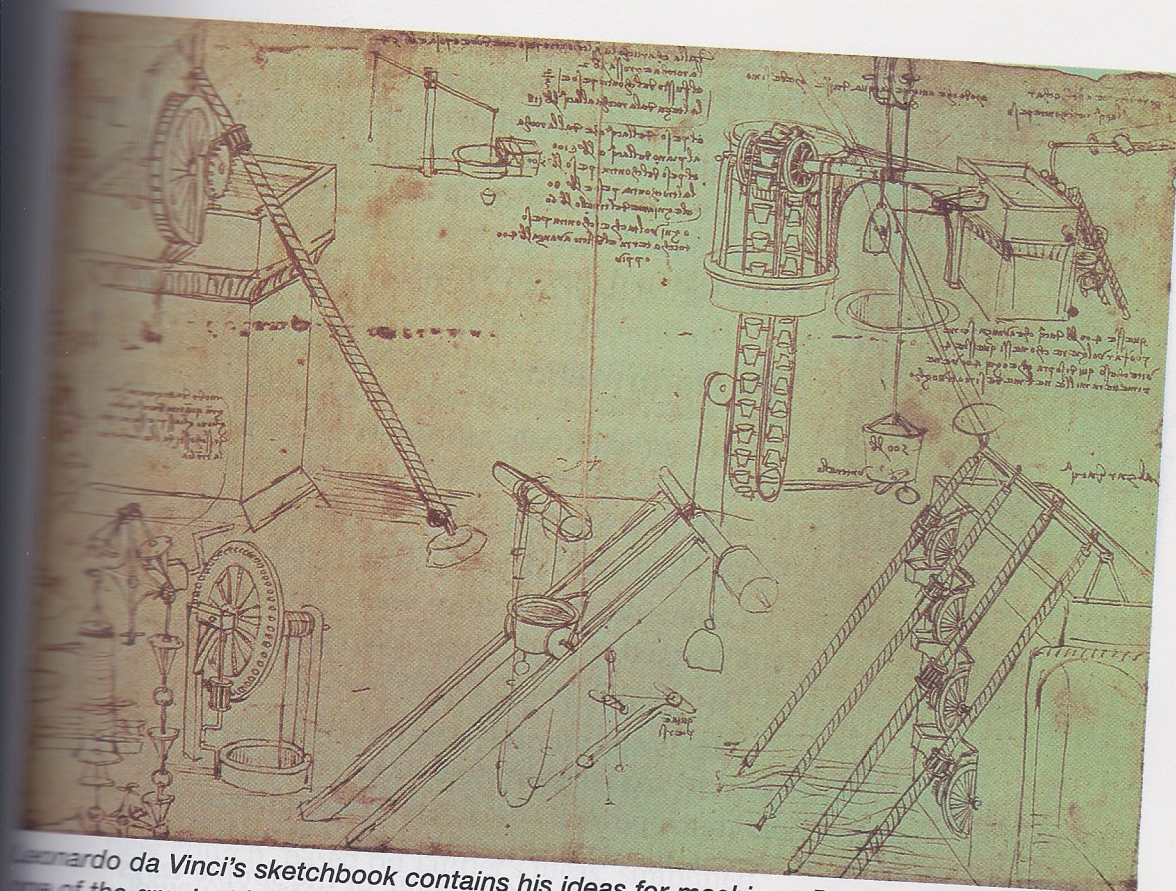
Today we think of a Renaissance man as one who was expected to enjoy art, to write poetry, and to play a musical instrument. Renaissance education taught people to read and write Latin and to speak several other languages. People were expected to understand the politics of the day. They were supposed to ride well on horseback and to be good at sports.

A Renaissance man should be able to put up a good fight if necessary. A Renaissance man also had to learn proper manners of courtesy and grace. Great importance was placed on being well educated and very well rounded. One of the best examples of the perfect Renaissance man was Leonardo da Vinci.

## Leonardo da Vinci

A list of what Leonardo da Vinci could *not* do would very likely be shorter than a list of what he could do! Italian-born da Vinci was a Renaissance genius in not one field, but many. He was one of the world's greatest artists and scientists. Da Vinci was a painter, a sculptor, an architect, and a musician. He was an inventor, an astronomer, and a geologist. He was one of the first to show an interest in "flying machines."

Da Vinci's sketchbooks show drawings of many different machines. His ideas for flying machines were based on the flight of birds. These sketches also show great understanding of the human body and of engineering.



Leonardo da Vinci's sketchbook contains his ideas for machines. Da Vinci was one of the greatest inventors of all time.

Da Vinci had a sure sense of the way things worked. He understood the way parts joined together to form a whole. This great knowledge helped make Da Vinci much a good artist.

Da Vinci's *Mona Lisa* is a painting of a woman with a mysterious smile. It is one of the world's most famous masterpieces. Today it hangs in the Louvre Museum in Paris, France.

For 17 years Da Vinci served the Duke of Milan. He worked as a painter, a sculptor, and an engineer. He was then hired as a painter by the government of Florence. For the last two years of his life, Da Vinci lived in France at the invitation of King Francis I.

A German monk named Martin Luther became a leader among the reformers. Luther was born a German peasant. He grew up as a Roman Catholic. He studied at a university and became a monk. The more Luther studied religion, however, the more he worried. His concern was that the Catholic Church was headed in the wrong direction.

## Martin Luther

The movement that questioned the practices of the Catholic Church was called the *Reformation*. Some Europeans set out to **reform**, or change, the church.

Was it right for the clergy to be so interested in wealth? Was it right that church officials should have so much power? Some people also questioned the ceremonies and rituals that filled church services. They wondered what had become of the simple ways taught by Jesus.

During the Renaissance, more people went to school and learned to read. They began to question many things, including the ways of the church. During the Renaissance, more people went to school and learned to read. They began to question many taxes. Popes, bishops, and priests were wealthy men. Church held great power. It owned lands and collected Western Europe were Roman Catholics. The Catholic Church held great power. It owned lands and collected taxes. Popes, bishops, and priests were wealthy men.

## The Reformation

Da Vinci, the Renaissance man, used one talent to benefit another. His scientific studies helped him understand people and the world. This understanding made his paintings seem all the more real. He had a desire to know more about everything. It was curious like Da Vinci's that made the Renaissance a time of new ideas and new inventions.



The Mona Lisa by Leonardo da Vinci

A person did not need fancy rituals or pilgrimages to find God, Luther said. He began to criticize the Catholic Church in public sermons. In 1517 Martin Luther wrote a list of 95 complaints about the church. He nailed it to the door of the Castle Church in Wittenberg, Germany.

Luther continued to question church practices. In 1521 he spoke out against the power and authority granted the pope. This did not please the pope. Luther was told to recant, or take back, what he had said. Luther refused. He said that unless the Bible itself proved him wrong, he would not recant.

Luther was thrown out of the Catholic Church. Emperor Charles V declared Luther an outlaw. He said that anyone could kill Luther without punishment.

Several German princes supported Luther and his feelings about the church. One prince hid him in a castle. The church could not take him prisoner. Soon Luther had so many supporters that before long he was able to set up a whole new church.

The new church, based on Luther's ideas, simplified religion. Religious practices would be based on what was found in the Bible. In 1529 the Catholic Church declared that no one should practice Lutheranism. Lutheran princes decided to **protest**. Because of this, they were called *Protestants*.

Other leaders across Europe also protested against Catholic practice. Other Protestant churches were started. The Reformation was under way.

**HISTORY FACT**

Martin Luther challenged the supreme authority of the pope.