Objectives

As you teach this section, keep students focused on the following objectives to help them answer the Section Focus Question and master core content.

- Explain the emergence of universities and their importance to medieval life.
- Understand how newly translated writings from the past and from other regions influenced medieval thought.
- Describe the literature, architecture, and art of the High and late Middle Ages.

Build Background Knowledge **L3**

Remind students that historians now recognize that a new culture was emerging in the early Middle Ages. Have students predict what characteristics a civilization might need for its learning and culture to flourish.

Set a Purpose **L3**

- **WITNESS HISTORY** Read the selection aloud or play the audio.

  🔊 AUDIO **Witness History Audio CD,** Life in a Medieval University

  Ask **What can you learn about medieval university life from this letter?** (Answers will vary.)

- **Focus** Point out the Section Focus Question and write it on the board. Tell students to refer to this question as they read. (Answer appears with Section 4 Assessment answers.)

- **Preview** Have students preview the Section Objectives and the list of Terms, People, and Places.

- **Note Taking** Have students read this section using the Structured Read Aloud strategy (TE, p. T20). As they read, have students fill in the flowchart showing the causes of the cultural resurgence in the Middle Ages.

  📝 **Reading and Note Taking Study Guide,** p. 78

Medieval scholars at the University of Paris

Medieval inkwell and pen

WITNESS HISTORY 🔊 AUDIO

Life in a Medieval University

Although some university students were scolded for fooling around rather than studying, this father had the opposite worry:

❝ They tell me that, unlike everyone else, you get out of bed before the first bell sounds in order to study, that you are the first into the classroom and the last to leave it. And that when you get back home you spend the whole day going over what you were taught in your lessons. . . . Many people make themselves permanently ill through excessive study; some of them die, and others . . . waste away day after day. ❞
—Boncompagno da Signa

Focus Question What achievements in learning, literature, and the arts characterized the High and late Middle Ages?

Learning and Culture Flourish

Objectives
- Explain the emergence of universities and their importance to medieval life.
- Understand how newly translated writings from the past and from other regions influenced medieval thought.
- Describe the literature, architecture, and art of the High and late Middle Ages.

Terms, People, and Places

scholasticism	Geoffrey Chaucer
Thomas Aquinas	Gothic style
vernacular	flying buttresses
Dante Alighieri	illumination

Note Taking

Reading Skill: Recognize Multiple Causes Keep track of the many causes of the cultural and intellectual flowering of the Middle Ages by completing a flowchart like the one below.

Universities	Scholarship	Literature	The Arts
•	•	•	•
•	•	•	•

↓ ↓ ↓ ↓

Learning and Culture Flourish
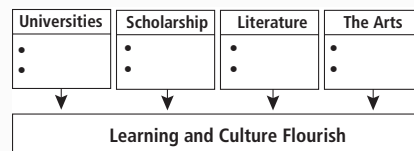
In spite of the problems of students studying too much—or sometimes too little—medieval universities brought prestige and profit to the cities in which they were located. Local merchants provided students with housing, food, clothing, and entertainment. But students could also create problems for university communities. The priest Jacques de Vitry complained, "They were always fighting and engaging in scuffles." Who were these students, and why did universities begin to spring up in the 1100s?

Medieval Universities Emerge

By the 1100s, Europe was experiencing dynamic changes. A more reliable food supply and the growth of trade and towns were signs of increased prosperity.

The Need for Educated People Grows As economic and political conditions improved in the High Middle Ages, the need for education expanded. The Church wanted better-educated clergy. Royal rulers also needed literate men for their growing bureaucracies. By acquiring an education, the sons of wealthy townspeople might hope to qualify for high positions in the Church or with royal governments.

By the 1100s, schools had sprung up around the great cathedrals to train the clergy. Some of these cathedral schools evolved into the first universities. They were organized like guilds, with charters to protect the rights of members and established standards for training.

Vocabulary Builder

Use the information below and the following resources to teach the high-use word from this section.
All in One **Teaching Resources, Unit 2,** p. 26; **Teaching Resources, Skills Handbook,** p. 3

High-Use Word	Definition and Sample Sentence
initiate, p. 264	v. to start, to introduce We quickly became friends after I **initiated** a soccer game with my neighbor.

As early as the 900s, the Italian city of Salerno had a respected medical school. Later, Bologna's university—founded in 1158—became famous for legal studies. Paris and Oxford founded their universities in the later 1100s. Soon, other cities rushed to organize universities. Students often traveled from one university to another to study different subjects, seeking food and lodging from whatever patrons they could find to support them.

Student Life University life offered few comforts. A bell wakened students at about 5 A.M. for prayers. Students then attended classes until 10 A.M., when they had their first meal of the day. Afternoon classes continued until 5 P.M. Students usually ate a light supper and then studied until bedtime. Because at first medieval universities did not have permanent buildings, classes were held in rented rooms or in the choir loft of a church. Students sat for hours on hard benches as the teacher dictated and then explained Latin texts. Students were expected to memorize what they heard.

A program of study covered the seven liberal arts: arithmetic, geometry, astronomy, music, grammar, rhetoric, and logic. There were separate programs for the further study of law, medicine, and theology. To show mastery of a subject, students took an oral exam. Earning a degree as a bachelor of arts took between three and six years. Only after several more years of study could a man qualify to become a master of arts and a teacher. Theology was the longest course of study.

Women and Education Women were not allowed to attend universities. And so, for the most part, they were also deprived of the mental stimulation that was an important part of university life. Without a university education, women could not become doctors, lawyers, or church officials.

There were educated women, however. Some girls received good educations in convents, and girls from noble families attended classes at Notre Dame de Paris, located in the French capital. Some nuns became scholars and writers. The writer Christine de Pisan (duh pee ZAHN) examined the issue of women's education. In *The City of Ladies,* she asks Lady Reason whether women are less capable of learning and understanding, as men insist. Lady Reason replies:

Primary Source

❝If it were customary to send daughters to school like sons, and if they were then taught the same subjects, they would learn as thoroughly and understand the subtleties of all arts and sciences as well as sons.❞
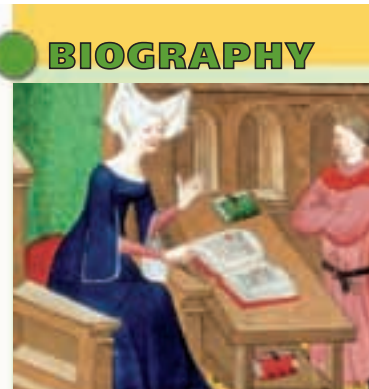—Christine de Pisan

Still, men continued to look on educated women as oddities. Most medieval men felt that women should pursue their "natural" gifts at home—raising children, managing the household, doing needlework—and leave books and writing to men.

✔ **Checkpoint** What was university life like in medieval Europe?

Europeans Acquire "New" Learning

Universities received a further boost from an explosion of knowledge that reached Europe in the High Middle Ages. Many of the "new" ideas had originated in ancient Greece but had been lost to Western Europeans after the fall of Rome.

BIOGRAPHY

Christine de Pisan
Christine de Pisan (1364?–1430?) was more educated than most men of her time. Her father, a physician and astronomer in the French court, saw that she received an excellent education. She spoke French, Italian, and possibly Latin as well.

Christine married at 15. When her husband died 10 years later, she supported herself and her three children by writing. Her first works were poems of lost love dedicated to her husband. Her writing was supported by lords and monarchs.

Because of her desire to comment on social issues, Christine gradually switched her focus from poetry to prose. She described women's place in medieval society and promoted women's rights and accomplishments. **Why do you think Christine began to write about women's issues?**

History Background

The Game of Chess Chess is thought to have originated in India around the 6th century AD. At that time, the game was called *chaturanga* and although it involved four players, it included features found in all subsequent versions of chess, including different pieces with varying powers and the need to vanquish one piece (today's king) in order to win. It is believed that Muslims brought the game to North Africa, Sicily, and Spain; Eastern Slavs carried it to Kievan Rus, and Vikings introduced chess to Iceland and England. The game has been favored by nobility and the wealthy, and it is from this fact that chess gained its nickname, the "royal game." The modern term *check mate* derives from the Persian *shah mat,* which means "the king is dead."

Medieval Universities Emerge 🄻🄳

Instruct

- **Introduce** Draw students' attention to the quote in the first paragraph about university students. Ask which they think was more typical: the student in the Witness History or these students.

- **Teach** Review the reasons that education expanded at this time. Ask **Why did an improving economy lead to the growth of universities?** *(As some people became wealthy, they looked for opportunities for their children in government bureaucracies and the Church, which required education.)* **How did medieval teaching methods differ from today's methods?** *(They depended more on memorization and oral exams.)* **How did women get an education?** *(Only a few did; in convents and some private schools).* Using the Idea Wave strategy (TE, p. T22), ask **How does your routine compare with that of a student of the Middle Ages?**

Independent Practice

Tell students that it was not unusual for medieval writers to use characters to symbolize or represent ideas, as Christine de Pisan does with Lady Reason, who represents common sense. Have small groups work together to write Lady Reason's comments about another aspect of medieval life.

Monitor Progress

- Circulate as students are working to make sure they have selected an appropriate topic and are reflecting the point of view of an educated medieval woman.

- As students fill in their flowcharts, circulate to make sure they understand the causes of the cultural resurgence in Europe. For a completed flowchart, see

🏛 **Note Taking Transparencies,** 82

Answers

✔ Sample: Boys from wealthy families studied the liberal arts.

BIOGRAPHY Sample: She had to earn her own living, so opportunities for women was an important issue to her.

Europeans Acquire "New" Learning (L3)

Instruct

- **Introduce: Vocabulary Builder**
  Have students read the Vocabulary Builder term and its definition. Tell students they will learn how the "new" learning in Europe was *initiated* by the "old" learning of the ancient Greeks and by Muslim scholarship.

- **Teach** Review the reasons why ancient Greek knowledge had been lost to much of Western Europe after the fall of Rome. Ask **Who preserved and continued to study ancient Greek works?** *(Muslim scholars of the Middle East)* **Why were these works a challenge to medieval thinkers?** *(Aristotle taught that people should use reason to discover truth; the Church taught that faith and the Church were the final authority.)* **How was this conflict resolved?** *(Scholastics said that both faith and reason lead to the same truth: God rules over an orderly universe.)* **Why did science make little progress at this time?** *(It did not fit with Church teachings and was therefore rejected.)*

- **Analyzing the Visuals** Have students examine each of the pictures in Medieval Innovation in Europe. Ask students to describe the innovations and what, if any, differences exist between the original and modern designs.

Independent Practice

Have students choose one item from the Infographic and write a medieval advertisement for it. They can use modern advertising techniques but should reflect the lifestyles and technology of the Middle Ages. Their ads should reflect the significance of their chosen technological advance.

Monitor Progress

Circulate to make sure student advertisements reflect the importance of the innovation and the lifestyle of the Middle Ages.

Medieval Innovation in Europe

Many technological innovations that still affect our daily lives were either invented or adapted by Europeans during the Middle Ages.

The invention of the escapement mechanism allowed a clock to measure hours of equal length regardless of the times of sunrise and sunset. These clocks regulated when church bells rang to mark the divisions of the day. ▼

In the 1200s, the first buttons were used as ornaments and sold by jewelers. Once their practical use was discovered, less expensive buttons allowed garments to have adjustable necklines and detachable sleeves. ▼

The invention of eyeglasses was particularly welcome to medieval monks who copied manuscripts. In fact, a 1313 document attributes this innovation to a Dominican friar from Italy. ▶

A series of innovations ▶ improved medieval farming—and the food supply. The iron plow was more efficient. A new harness allowed a change from oxen to faster horsepower.

Vocabulary Builder

initiated—(ih NISH ee ayt ed) *vt.* started; introduced

Muslim Scholarship Advances Knowledge Muslim scholars had translated the works of Aristotle and other Greek thinkers into Arabic. Their translations and knowledgeable commentaries on these ancient texts spread across the Muslim world. In Muslim Spain, Jewish and Christian scholars translated these works into Latin, the language of Christian European scholars. In the 1100s, when these new translations reached Western Europe, they initiated a revolution in the world of learning.

Christian Scholars Struggle With New Ideas The writings of the ancient Greeks posed a challenge to Christian scholars. Aristotle taught that people should use reason to discover basic truths. Christians, however, accepted many ideas on faith. They believed that the Church was the final authority on all questions. How could they use the logic of Aristotle without undermining their Christian faith?

Some Christian scholars tried to resolve the conflict between faith and reason. Their method, known as **scholasticism,** used reason to support Christian beliefs. Scholastics studied the works of the Muslim philosopher Averroës (uh VEER uh weez) and the Jewish rabbi Maimonides (my MAHN uh deez). These thinkers, too, used logic to resolve the conflict between faith and reason.

The writings of these philosophers influenced the famous scholastic **Thomas Aquinas** (uh KWY nus). In a monumental work, *Summa theologica,* Aquinas concluded that faith and reason exist in harmony. Both lead to the same truth, that God rules over an orderly universe. Aquinas thus brought together Christian faith and classical Greek philosophy.

New Approaches to Science and Mathematics Scientific works, translated from Arabic and Greek, also reached Europe from Spain and the Byzantine empire. Christian scholars studied Hippocrates on medicine and Euclid on geometry, along with works by Arab scientists. They saw, too, how Aristotle had used observation and experimentation to study the physical world. Yet science made little real progress in Europe in the Middle Ages because most scholars still believed that all true knowledge must fit with Church teachings. It would take many centuries before Christian thinkers changed the way they viewed the physical world.

During this period, Europeans adopted Hindu-Arabic numerals, which were much easier to use than the cumbersome system of Roman numerals that had been traditional throughout Europe for centuries. In time, the use of Arabic numerals (as they are commonly called) allowed both scientists and mathematicians to make extraordinary advances in their fields.

✓ **Checkpoint** Describe the new learning of medieval Europe.

Medieval Literature

While Latin remained the written language of scholars and churchmen, new writings began to appear in the **vernacular,** or the everyday languages of ordinary people, such as French, German, and Italian. These writings captured the spirit of the High and late Middle Ages. Medieval literature included epics, or long narrative poems, about knights and chivalry as well as tales of the common people.

Heroic Epics Captivate Across Europe, people began writing down oral traditions in the vernacular. French pilgrims traveling to holy sites loved to hear the *chansons de geste,* or "songs of heroic deeds." The most popular was the *Song of Roland,* written around 1100, which praises the courage of one of Charlemagne's knights. A true chivalric hero, Roland loyally sacrifices his life out of a sense of honor. Spain's great epic, *Poem of the Cid,* tells the story of Rodrigo Díaz de Vivar, a bold and fiery Christian lord who fought both with and against Muslim forces. His nickname, *El Cid,* comes from the Arabic word for "lord."

Dante's *Divine Comedy* "In the middle of the journey of life, I found myself in a dark wood, where the straight way was lost." So begins the *Divine Comedy* written in the early 1300s by the Italian poet **Dante Alighieri** (DAHN tay ah leeg YEH ree). The poem takes the reader on an imaginary journey into hell and purgatory, where souls await forgiveness. Finally, in the third section, Dante describes a vision of heaven.

"Abandon all hope, ye that enter here" is the warning Dante receives as he approaches hell. There, he talks with people from history who tell how they earned a place in hell. Humor, tragedy, and the endless medieval quest for religious understanding are all ingredients in Dante's poem. His journey summarizes Christian ethics, showing how people's actions in life determine their fate in the afterlife.

Near the end of the French epic poem the *Song of Roland,* the great hero, Count Roland, has been wounded in battle. Now he "feels death coming over him." Why does the author include the angels bearing Roland's soul to heaven?

Primary Source

❝ Count Roland lay stretched out beneath a pine;
He turned his face toward the land of Spain,
Began to remember many things now:
How many lands, brave man, he had conquered;
And he remembered: sweet France, the men of his line,
Remembered Charles, his lord, who fostered him:
Cannot keep, remembering, from weeping, sighing;
But would not be unmindful of himself:
He confesses his sins, prays God for mercy.
Then he held out his right glove to his Lord:
Saint Gabriel took the glove from his hand.
He held his head bowed down upon his arm,
He is gone, his two hands joined, to his end.
Then God sent him his angel Cherubin
And Saint Michael, angel of the sea's Peril;
And with these two there came Saint Gabriel:
They bear Count Roland's soul to Paradise. ❞

🔊 AUDIO

Link to Literature

Medieval Literature Medieval literature in the vernacular grew from several traditions. Traditional stories that had withstood the test of time were valued over original stories. Therefore, medieval authors often adapted themes and stories similar to those used by their Greek and Roman predecessors. Several of these works became the first examples of national literature, helping to define emerging European nations. These include the stories of King Arthur (Britain), *The Song of Roland* (France), and *El Cid* (Spain).

Architecture and Art L3

Instruct

- **Introduce: Key Terms** Read aloud the quote from Victor Hugo, the first two lines under the heading Architecture and Art. Ask students what he might mean by "write down in stone." Then ask them to find the key term *Gothic style* (in blue) and read its definition. Explain that this architectural style has come to symbolize the Middle Ages.

- **Teach** Discuss the art and architecture of a Gothic cathedral. Display **Color Transparency 48: Reims Cathedral, Interior** and point out the imposing grandeur, grace, and light of a Gothic cathedral. Ask **Besides the structure, what characteristics of Gothic cathedrals inspired religious devotion?** *(sculpted scenes from the Bible and lives of saints, religious paintings, and stained glass windows.)*

  📖 **Color Transparencies,** 48

- **Quick Activity** Display **Color Transparency 49: Stained-Glass Window from Chartres Cathedral.** Ask students to list the characteristics of medieval art. Then ask students to find some of those characteristics in the stained glass window and the tapestry shown in the text. Also discuss the way that some stained glass windows communicated religious stories to an illiterate population.

  📖 **Color Transparencies,** 49

Independent Practice

Remind students of what they have learned about the work of monks in monasteries: that they copied and illuminated both ancient and religious books. Display **Color Transparency 50: Page from the Book of Kells.** Ask students to write a paragraph explaining how this illumination is characteristic of the types of artwork found in medieval churches.

📖 **Color Transparencies,** 50

Monitor Progress

- As students write their paragraphs, circulate to make sure students understand the characteristics of the artwork found in medieval churches.

- Check Reading and Note Taking Study Guide entries for student understanding.

Answer

✔ Students' answers should show an understanding of the works they choose.

Chaucer's *Canterbury Tales* In the *Canterbury Tales,* the English writer **Geoffrey Chaucer** describes a band of pilgrims traveling to Saint Thomas Becket's tomb. In brilliant word portraits, he sketches a range of characters, including a knight, a plowman, a merchant, a miller, a monk, and a nun. Each character tells a story to entertain the group. Whether funny, romantic, or bawdy, each tale adds to our picture of medieval life.

✔ **Checkpoint** Describe three works of medieval literature.

Architecture and Art

"In the Middle Ages," wrote French author Victor Hugo, "men had no great thought that they did not write down in stone." Those "writings" were the great buildings of the Middle Ages. With riches from trade and commerce, townspeople, nobles, and monarchs indulged in a flurry of building. Their greatest achievements were the towering stone cathedrals that served as symbols of their wealth and religious devotion.
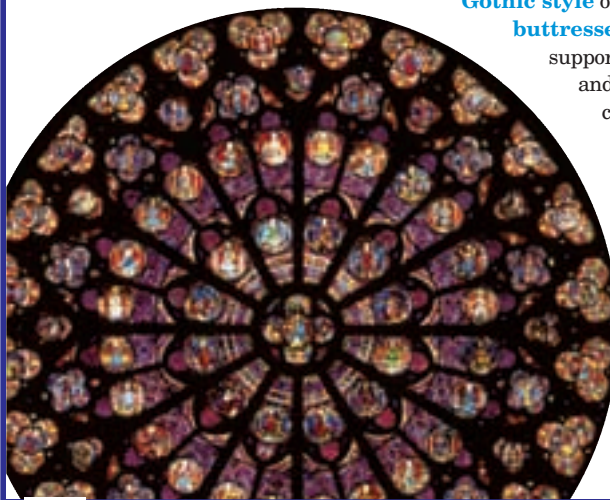
From Romanesque to Gothic In the year 1000, monasteries and towns were building solid stone churches that reflected Roman influences. These Romanesque churches looked like fortresses with thick walls and towers. Typically, the roof of a Romanesque church was a barrel vault, a long tunnel of stone that covered the main part of the structure. It was heavy, supported by massive walls with no windows or only tiny slits of windows for fear of weakening the support for the roof. As a result, the interior of a Romanesque church was dark and gloomy.

About 1140, Abbot Suger wanted to build a new abbey church at St. Denis near Paris. He hoped that it "would shine with wonderful and uninterrupted light." There, builders developed what became known as the **Gothic style** of architecture. Its most important feature was the **flying buttresses,** or stone supports that stood outside the church. These supports allowed builders to construct higher, thinner walls and leave space for large stained-glass windows. Gothic churches soared to incredible heights. Their graceful spires and tall windows carried the eye upward to the heavens. "Since their brilliance lets the splendor of the True Light pass into the church," declared a medieval visitor, "they enlighten those inside."

Stained glass rose window in Notre Dame Cathedral, Paris

Making Art in Stone and Glass As churches rose, stonemasons carved sculptures to decorate them both inside and out. In addition to scenes from the Bible and the lives of the saints, sculptors included lifelike forms of plants and animals. They also carved whimsical or frightening images of mythical creatures such as dragons and unicorns.

L1 Special Needs   **L2 Less Proficient Readers**   **L2 English Language Learners**

Refer students to the diagram of a gothic cathedral on page 268. Point out the hallmarks of gothic architecture, including spires, flying buttresses, and ornate stained glass. Then ask **Why do you think cities and towns in Europe went to great lengths and expense to build cathedrals?** *(Sample: to worship God and show the strength of their city)*

Use the following resources to help students acquire basic skills.

✏️ **Adapted Reading and Note Taking Study Guide**

- Adapted Note Taking Study Guide, p. 78
- Adapted Section Summary, p. 79

At the same time, other skilled craft workers created stained-glass windows that added to the splendor of Gothic churches. These artisans stained small pieces of glass in glowing colors. They then set the pieces in thin lead frames to create pictures depicting the life of Jesus, a biblical event, or other religious themes. These religious pictures helped educate the many people who were unable to read.

Paintings, Manuscripts, and Tapestries Churches also contained religious paintings called altarpieces. The purpose of these paintings, and similar ones that wealthy people had in their homes, was to symbolize religious ideas. In this Gothic style, religious figures were not meant to look like real people in real settings but rather to inspire devotion.

In the 1300s and 1400s, the Gothic style was also applied to the artistic decoration of books, known as **illumination.** Since the early Middle Ages, monks, nuns, and other skilled artisans had illuminated books with intricate designs and miniature paintings of biblical scenes and daily life. They often featured brilliant colors and decorative detail. Artists decorated prayer books known as Books of Hours with depictions of towns and castles, knights and ladies, and peasants in the fields.

Medieval artists also created "paintings" in thread. Stone castles were drafty and cold. Tapestries, or woven wall hangings, were hung in castle rooms and halls to add color and warmth. One of the most famous, the Bayeux Tapestry, is really a huge embroidery 231 feet long. Its 70 scenes depict the Norman Conquest of England, and historians have used it to learn about that event.

✓ **Checkpoint** Describe the artistic works found in medieval churches.

The Bayeux Tapestry
This section of the famous Bayeux Tapestry shows Harold, who became the last Anglo-Saxon king of England, with his fleet. Harold was killed in the Battle of Hastings in 1066.

4 Assessment

Progress Monitoring Online
For: Self-quiz with vocabulary practice
Web Code: naa-0841

Terms, People, and Places
1. What do the key terms and people listed at the beginning of the section have in common? Explain.

Note Taking
2. **Reading Skill: Recognize Multiple Causes** Use your completed flowchart to answer the Focus Question: What achievements in learning, literature, and the arts characterized the High and late Middle Ages?

Comprehension and Critical Thinking
3. **Predict Consequences** How might universities that drew students from many lands affect European life in the future? Explain your answer.
4. **Analyze Information** How did new knowledge pose a challenge to Christian scholars?
5. **Synthesize Information** Why were heroic epics in the vernacular popular with medieval Europeans?
6. **Identify Central Issues** How was religion central to the art and architecture of the Middle Ages?

● **Writing About History**
Quick Write: Write a Thesis Statement Your thesis statement expresses your idea about your topic. It might state the most important cause of an event or that multiple causes were at work, or it might emphasize effects. Refer to your graphic organizer to formulate statements such as:
• Changing economic, political, and social conditions led to the emergence of universities.
• Muslim scholarship had far-reaching effects on European philosophy, science, and mathematics.

Section 4 Assessment
1. They all have to do with the culture and learning of the High Middle Ages.
2. learning: rise of universities, interest in ancient Greek and Muslim learning, scholasticism; literature: heroic epics, Dante's *Divine Comedy,* Chaucer's *Canterbury Tales;* art and architecture: Gothic style, stained-glass, illuminated manuscripts, religious art, tapestries
3. Sample: They would encourage the spread of ideas and a blending of local cultures into a more general European culture.
4. Aristotle taught that people should use reason to discover truth; the Church taught that faith and the Church were the final authority.
5. people could understand the stories, whose heroes embodied their own ideals
6. The major architectural advance of the Middle Ages was the Gothic cathedral.

Stained-glass windows, painting, and sculpture often had religious themes.

● **Writing About History**
Responses should show an understanding of how a thesis statement expresses the concept of cause and effect.

For additional assessment, have students access **Progress Monitoring Online** at **Web Code naa-0841.**

The Gothic Cathedral

Objectives

- Describe distinguishing features of a Gothic cathedral.
- Explain the innovations that allowed builders to build taller structures.

Build Background Knowledge ⓛ

Ask students to summarize what they read about Gothic cathedrals. *(flying buttresses allowed large windows, spires lifted the eyes to heaven, many sculptures)* Explain that this architecture was labeled "Gothic" by Renaissance writers who considered it ugly.

Instruct ⓛ

Ask students to look at the picture of the vaulted ceiling. Explain that the pointed arches of a ribbed vault distribute the weight onto columns, rather than the wall. To demonstrate this, have them make a rounded arch with a piece of paper. Tell them to let go of the paper and watch what happens. *(The edges will push outward and the paper will fall flat.)* Explain that the pressure pushing down on the paper's edges is similar to the pressure exerted by rounded ceilings onto the cathedrals walls. Then tell them to make the shape of a vaulted arch. With a slight outward curve, the paper arches may stay up for a few seconds, but will ultimately fall. Ask **How does the pressure differ in the two arches?** *(pressure is less with a pointed arch)* **How could you hold up your paper arch?** *(should use buttresses)* Explain how flying buttresses counteract the weight of the ceiling and carry much of the weight of the roof.

Monitor Progress

To check understanding, have them draw a diagram showing how builders used vaulted ceilings and flying buttresses to build stronger, taller structures.

Thinking Critically

1. Vaulted ceilings and flying buttresses allowed walls to have many large windows and roofs to be higher.
2. Religion was very important.

The Gothic Cathedral

The Gothic cathedral was the crowning achievement of medieval architecture. Flying buttresses allowed for thinner walls with large windows that flooded the churches with light. Tall spires reached for the heavens and dominated the landscape. European cities competed to build the largest, grandest cathedrals. Notre Dame de Paris, shown here, was begun in 1163. It took artisans almost two centuries to complete it.
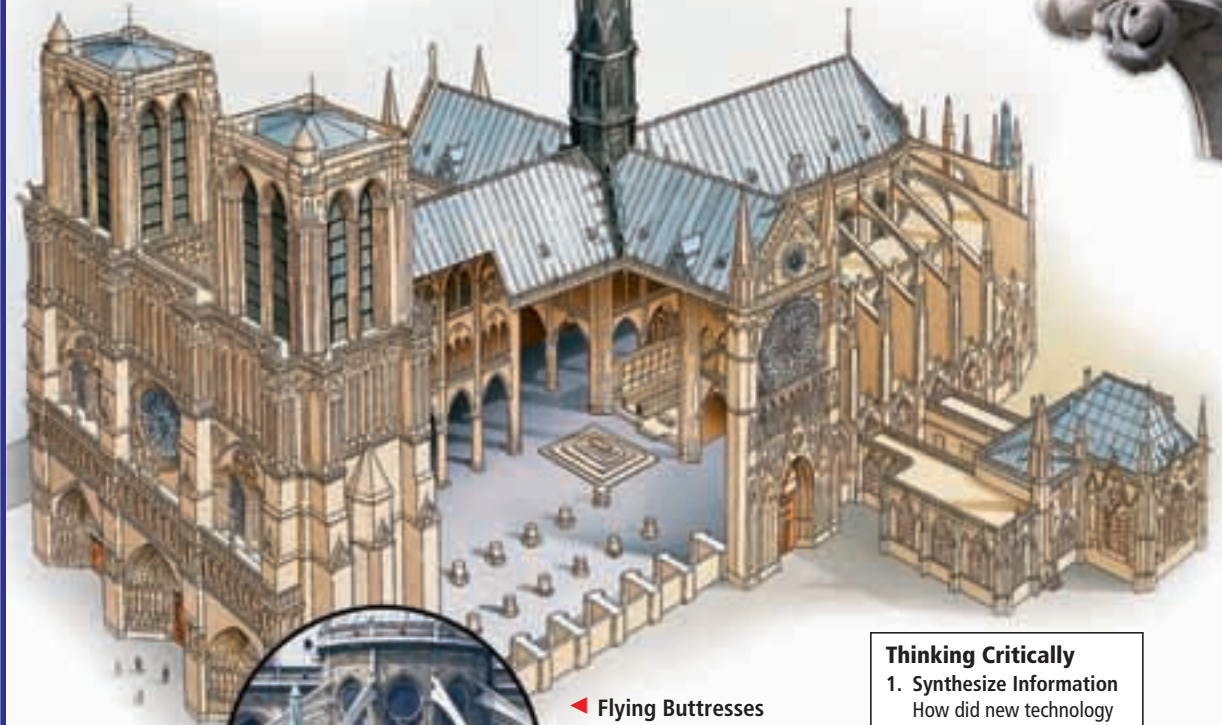
▶ **Vaulted Ceilings** Pointed arches called vaults form a strong skeleton on which the roof material is laid. This view looks up at Notre Dame's vaulted ceiling.

▶ **Gargoyles** Imaginatively carved figures serve as waterspouts to drain water from the roof. Later, the term *gargoyle* included other grotesque carvings on Gothic churches.

◀ **Flying Buttresses** These stone arches carry much of the weight of the roof, so thick stone walls are no longer needed.

Thinking Critically
1. **Synthesize Information** How did new technology allow Gothic cathedrals to "soar to the heavens" and be flooded with light?
2. **Draw Conclusions** What does the time and effort required to build Gothic cathedrals reveal about medieval culture?

Careers

Drafter The builders of Gothic cathedrals would have worked from drawings prepared by someone skilled in drafting. Today, drafters create drawings for the production of items as varied as spacecraft, toasters, houses, and oil pipelines. They have usually completed college-level training in drafting at a four-year college, technical institute, or community college. Specialties include aeronautical, architectural, civil, electrical, electronic, mechanical, and process pipeline drafters. Since the computer has become a valuable tool in this field, drafters often have a background in computer-aided-design and drafting (CADD). Drafters typically work with engineers, surveyors, architects, and scientists.