Critical Thinking and Writing

1. **Defending a Position** Do you agree or disagree with Jefferson's idea that federal power should be limited? Explain the reasons for your position.
2. **Understanding Chronology** How did a British-French war help lead to a British-American war?
3. **Solving Problems** Describe a treaty that might have satisfied both Native Americans and white settlers in the early 1800s.
4. **Exploring Unit Themes** **Nationalism** Describe two events or developments that caused many Americans to become more nationalistic during the Age of Jefferson.

Using Primary Sources

Soon after passage of the Embargo Act, President Jefferson received this letter from Jonathan Hall, a resident of New Hampshire:

> "Sir: I have respected your laws and your government for the United States of America and I wish to have you continue your laws and government and keep the embargo on till you see fit to take it off, though it is very trying to the people in this country about their debts.... I have a father and a mother and they can't take care of themselves and as times are I can't pay for their place so... I hope that... your [honor] will do a little for me, Jonathan Hall."

Source: *Jefferson Papers*. "Capt. Jonathan Hall to Jefferson." August 12, 1808.

Recognizing Points of View **(a)** Did Hall approve of the Embargo Act? **(b)** How did the embargo affect Hall? **(c)** Explain how the embargo might have caused this effect.

Activity Bank

Interdisciplinary Activity

Exploring Civics Create a chart comparing the different ideas of the Federalists and Republicans during the Age of Jefferson. Include categories such as ideas about democracy, economic policy, military policy, and foreign policy.

Career Skills Activity

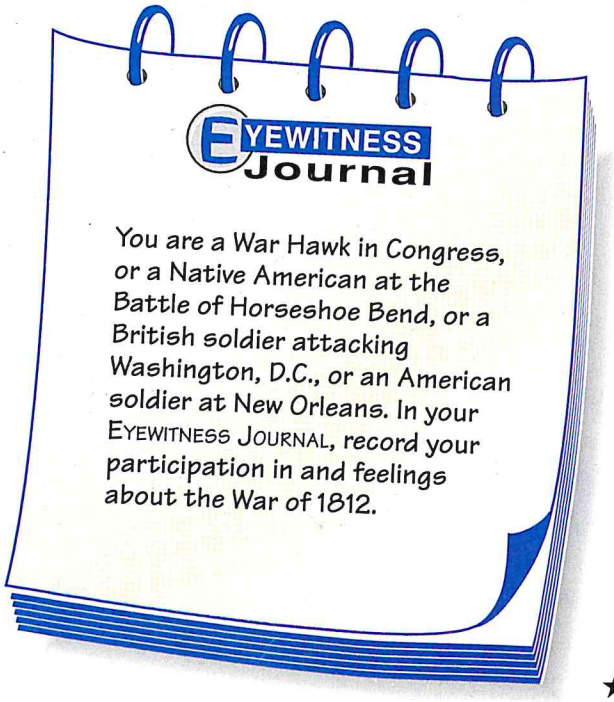
Political Leaders Write a persuasive speech supporting or opposing war with Britain in 1812. The purpose of the speech is to persuade listeners to agree with your point of view. Deliver your speech to the class. Then, invite students to express their own views. If there is disagreement, you might wish to debate the issue.

Citizenship Activity

Creating a Poster "We are all Republicans, we are all Federalists," said President Jefferson. Create a poster describing and illustrating four goals you think all Americans should agree on, regardless of their political party.

Internet Activity

Use the Internet to find information about current or recent embargoes. In a written report, describe two of these modern embargoes and the reason for each. Explain whether or not each has been successful.



Chapter 11

Industry and Growth

1790–1825

What's Ahead

Section 1
The Industrial Revolution

Section 2
Moving Westward

Section 3
Building National Unity

Section 4
Latin America and the United States

In the early 1800s, the United States changed rapidly. New technology caused a growth in industry. New factories sprang up along the nation's waterways, and with them new towns and cities. The nation increased in size, too, as settlers swarmed west along roads and rivers.

Change led to increased differences. Economic differences grew between the traditional farming society and the newer industrial society. Regional differences also grew between the North, South, and West. The nation's leaders struggled to strengthen and unify a rapidly expanding nation. They also faced the challenge of creating a bold new foreign policy, as neighboring nations in Latin America won independence.

Why Study History?

Today, we live in an era of rapid technological change. Our age is not the first time Americans have faced a revolution in technology. In the early 1800s, as today, new inventions changed forever the way people lived. To focus on this connection, see the *Why Study History?* feature, "Technology Continues to Change Our Lives," in this chapter.

Viewing History — A New Age of Steamboats

Steam Ferry, St. Louis *by French artist Leon Pomarede is one of the earliest paintings of St. Louis, Missouri. It shows steam-powered ships puffing down the Mississippi toward the city. In the early 1800s, steamboats and other new means of transportation made it easier for settlers to travel to the West. At the same time, new technology changed how goods were produced and how people worked.*

★ **What advantages do you think steamboats might have had over earlier forms of travel?**

1807
Fulton's steamship makes record-breaking trip

1816
New tariff sparks sectional dispute

1823
Monroe Doctrine warns Europe not to recolonize the Americas

1805 | 1810 | 1815 | 1820 | 1825

1807 World Event
Gas street lighting demonstrated in London

1815 World Event
Napoleon defeated at Waterloo

1 The Industrial Revolution

As You Read

Explore These Questions

- What were the effects of the Industrial Revolution?
- How did the Industrial Revolution come to the United States?
- What was life like in early factories?

Define

- spinning jenny
- capitalist
- factory system
- interchangeable parts
- urbanization

Identify

- Industrial Revolution
- Samuel Slater
- Moses Brown
- Francis Cabot Lowell
- Boston Associates
- "Lowell girls"
- Eli Whitney

SETTING the Scene At dawn, the factory bell woke 11-year-old Lucy Larcom. Rising quickly, she ate her breakfast, and hurried to her job at a spinning mill in Lowell, Massachusetts. Years later, Larcom described her workplace:

> "I never cared much for machinery. The buzzing and hissing and whizzing of pulleys and rollers and spindles and flyers around me often grew tiresome.... I could look across the room and see girls moving backward and forward among the spinning frames, sometimes stooping, sometimes reaching up their arms, as their work required."

Factories and machinery were part of a revolution that reached the United States in the early 1800s. Unlike the American Revolution, this one had no battles or fixed dates. The new **Industrial Revolution** was a long, slow process which completely changed the way goods were produced.

The Industrial Revolution Begins

Before the 1800s, most people were farmers and most goods were produced by hand. As a result of the Industrial Revolution, this situation gradually began to change. Machines replaced hand tools. New sources of power, such as steam, replaced human and animal power. While most Americans continued to farm for a living, the economy began a gradual shift toward manufacturing.

New technology

The Industrial Revolution started in Britain in the mid-1700s. British inventors developed new technologies that transformed the textile industry.

Since early times, workers used spinning wheels to make thread. A spinning wheel, however, could spin only one thread at a time. In 1764, James Hargreaves developed the **spinning jenny,** a machine that could spin several threads at once. Later, Richard Arkwright invented a machine that could hold 100 spindles of thread. It was called the water frame because it required water power to turn its wheels.

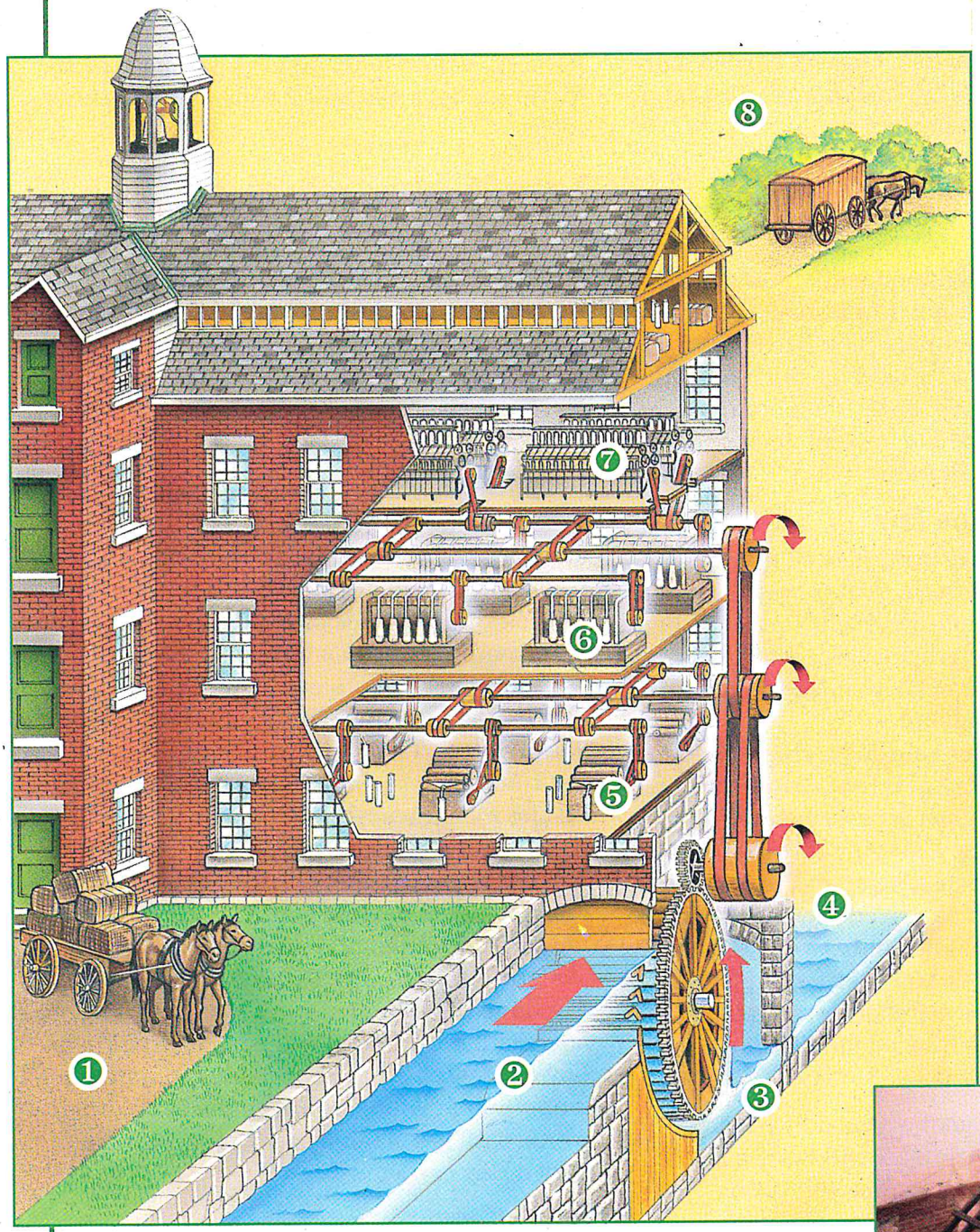
Other inventions speeded up the process of weaving thread into cloth. In the 1780s, Edmund Cartwright built a loom powered by water. It allowed a worker to produce 200 times more cloth in a day than was possible before.

The factory system

New inventions led to a new method of production. Before the Industrial Revolution, most spinning and weaving took place in the home. Machines like the water frame, however, had to be housed in large mills near rivers. Water flowing downstream or over a waterfall turned a wheel that produced the power to run the machines.

To set up and operate a spinning mill required large amounts of capital, or money.

Linking History and Technology



❶ *Wagons bring raw cotton to the mill to be spun into thread.*

❷ *Fast-moving water causes the water wheel to turn.*

❸ *The turning water wheel powers the mill's main shaft.*

❹ *The main shaft drives pulleys, which turn belts that drive the mill machinery.*

❺ *Carding machines comb the raw cotton fiber.*

❻ *Drawing machines pull the combed cotton fibers into ropelike strands.*

❼ *Spinning frames twist combed and drawn cotton strands into thread and wind them onto a bobbin.*

❽ *Wagons carry spun thread to weavers who use it to make cloth.*

Spinning Mill

New technology in the textile industry sparked the Industrial Revolution. As shown here, rapidly moving water turned a water wheel, like the one above. The wheel produced the power to run the machines. ★ **Would your town or community have been a suitable place for a spinning mill like this one? Why or why not?**

Main shaft of a spinning mill

Capitalists supplied this money. A **capitalist** is a person who invests in a business in order to make a profit. Capitalists built factories and hired workers to run the machines.

The new **factory system** brought workers and machinery together in one place to produce goods. Factory workers earned daily or weekly wages. They had to work a set number of hours each day.

A Revolution Crosses the Atlantic

Britain wanted to keep its new technology secret. It did not want rival nations to copy the new machines. The British Parliament passed a law forbidding anyone to take plans of Arkright's water frame out of the country. It also tried to prevent factory workers from leaving Britain.

Slater breaks the law

Samuel Slater soon showed that the law could not be enforced. Slater was a skilled mechanic in one of Arkwright's mills. When he heard that Americans were offering large rewards for plans of British factories, he decided to leave England.

In 1789, Slater boarded a ship bound for New York City. He knew that British officials searched the baggage of passengers sailing to the United States. Carrying any sketches of the factory would be dangerous. To avoid getting caught, he memorized the design of the machines in Arkright's mill.

In New York, Slater learned that **Moses Brown**, a Quaker merchant, wanted to build a spinning mill in Rhode Island. Slater wrote confidently to Brown:

> "If I do not make as good yarn as they do in England, I will have nothing for my services, but will throw the whole of what I have attempted over the bridge."

Brown replied at once: "If thou canst do what thou sayest, I invite thee to come to Rhode Island."

The first American mill

In 1790, Slater and Brown opened their first mill in Pawtucket, Rhode Island. In the following years, Slater continued to work on improvements. His wife, Hannah Slater, also contributed to the success of the mill. She discovered how to make thread stronger so that it would not snap on the spindles.

The first American factory was a huge success. Before long, other American manufacturers began to build mills using Slater's ideas.

Lowell, Massachusetts: A Model Factory Town

The War of 1812 provided a boost to American industries. The British blockade cut Americans off from their supply of foreign goods. As a result, they had to produce more goods themselves.

Francis Cabot Lowell

During the war, **Francis Cabot Lowell,** a Boston merchant, found a way to improve on British textile mills. In Britain, one factory spun thread while a second factory wove it into cloth. Why not, Lowell wondered, combine spinning and weaving under one roof?

To finance his project, Lowell joined with several partners in 1813 to form the **Boston Associates.** They built a textile factory in Waltham, Massachusetts. The new mill had all the machines needed to turn raw cotton into finished cloth.

After Lowell's death, the Boston Associates took on a more ambitious project. They built an entire factory town and named it after him. In 1821, Lowell, Massachusetts, was a village of five farm families. By 1836, it boasted more than 10,000 people. Visitors to Lowell described it as a model community made up of "small wooden houses, painted white, with green blinds, very neat, very snug, very nicely carpeted."

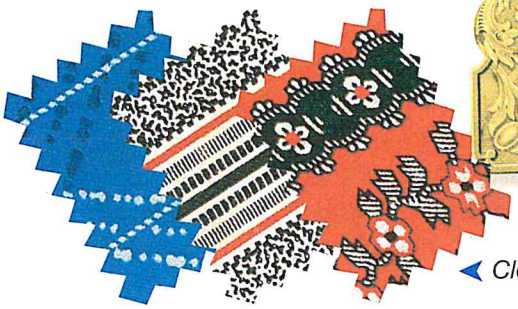
"Lowell girls"

To work in their new mills, the Boston Associates hired young women from nearby farms. The **"Lowell girls,"** as they came to be called, usually worked for a few years in the mills before returning home to marry. Most sent their wages home to their families. Some saved part of their wages to help set up their own homes.

Viewing History

At Work in the Lowell Mills

The town of Lowell, Massachusetts, became a model for American industry. This label was attached to a bolt of cloth produced at a Lowell mill. As the label shows, much of the machinery in the Lowell factories was operated by women. ★ **How does this label express pride in American industry?**



Cloth from a Lowell factory

At first, parents hesitated to let their daughters work in the mills. To reassure parents, the Boston Associates built boarding houses for their workers. The company also built a church and made rules to protect the young women.

Factory work was often tedious and hard. However, many women valued the economic freedom they got from working in the mills. The *Lowell Offering*, a magazine by and for workers in the Lowell mills, printed a song that began:

> "Despite of toil we all agree
> Out of the mills, or in,
> Dependent on others we ne'er will be
> So long as we're able to spin."

Impact on Daily Life

In Lowell and elsewhere, mill owners mostly hired women and children. They did this because they could pay women and children half of what they would have had to pay men.

Child labor

Boys and girls as young as seven years of age worked in factories. Small children were especially useful in textile mills because they could squeeze around the large machines to change spindles. "I can see myself now," recalled a woman who had worked in a mill as a child, "carrying in front of me a [spindle] bigger than I was."

Today, most Americans look upon child labor as cruel. Yet in the 1800s, farm children also worked hard from an early age. Most people did not see much difference between children working in a factory or on a farm. Often, a child's wages were needed to help support the family.

Long hours

Working hours in the mills were long—12 hours a day, 6 days a week. True, farmers also put in long hours. However, farmers worked shorter hours in winter. Mill workers, by contrast, worked nearly the same hours all year round.

In the early 1800s, conditions in American mills were generally much better than in most factories in Europe. As industries grew, however, competition increased and employers took less interest in the welfare of their workers. In later chapters, you will read how working conditions grew worse.

Why Study History?

Because Technology Continues to Change Our Lives

Historical Background

Inventors like James Hargreaves and Richard Arkwright were not trying to change the world. They just wanted a better way to spin thread. (See page 294.) In the end, though, the Industrial Revolution changed forever how people worked, where they lived, and even how they spent their leisure time. Later inventions, such as the telephone and the automobile, have also transformed the world we live in.

Connections to Today

Not long before you were born, another revolution in technology began: the computer revolution. The earliest computers were not the kind you could have in your bedroom. One early model weighed 30 tons and filled an entire room!

Slowly, computers got smaller and spread out—to schools, businesses, hospitals, arcades, homes. Computers can help keep records, diagnose illnesses, or take people into outer space.

Connections to You

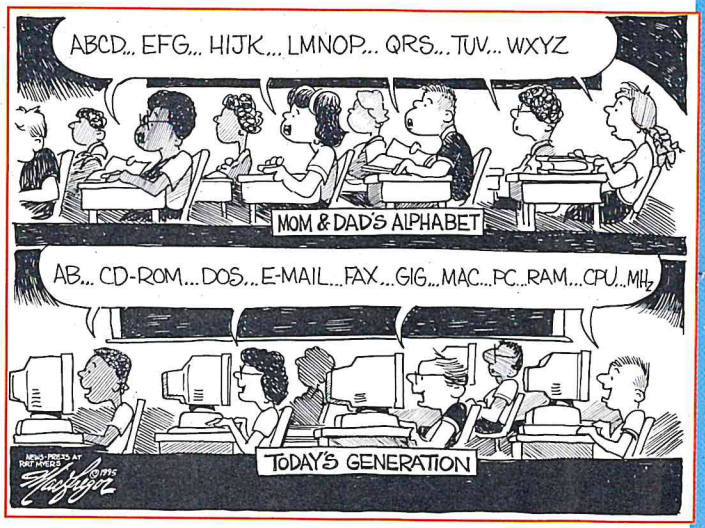
You already know some of the advantages of computers. You can research a report online and revise it on screen. You can enjoy a video game or create your own greeting cards. You can chat with people living in Sweden or Korea or Egypt.

Not every change is positive, though. Sitting at a computer screen for hours may cause severe headaches or hand injuries.

Some critics even fear that computers may lead to isolation. People can work, shop, and even make friends without leaving their homes. You may spend more time chatting with someone halfway around the world than going bowling with friends in your own neighborhood.

1. **Comprehension** **(a)** Name one result of the Industrial Revolution. **(b)** Name two results of the computer revolution.
2. **Critical Thinking** Do you think computers will lead to greater or less contact between people? Explain.

Activity **Making a Concept Web** Make a concept web to show some of the ways that computers affect you. Then, review your web and decide whether each effect is positive, negative, or both.



What point is this cartoon making about the impact of computers?

Changes in home life

The Industrial Revolution had a great impact on home life. On farms or in home workshops, families worked together as a unit. As the factory system spread, more family members left the home to earn a living.

These changes affected ideas about the role of women. In poorer families, women often had to go out to work. In wealthier families, husbands supported the family while women stayed at home. For many husbands, having a wife who stayed at home became a sign of a success.

Interchangeable Parts

Manufacturers benefited from the pioneering work of American inventor **Eli Whitney**. Earlier, skilled workers made goods by hand. For example, a gunsmith spent days making the barrel, stock, and trigger for a single musket. Because the parts were handmade, each musket differed a bit from the next. If a part broke, a gunsmith had to fashion a new part to fit that gun.

Whitney wanted to speed up gunmaking by having machines manufacture each part. Machine-made parts would all be alike—for example, one trigger would be identical to another. **Interchangeable parts** would save time and money.

Because the government bought many guns, Whitney went to Washington, D.C., to demonstrate his method. At first, officials laughed at his plan. Whitney paid them no attention. Carefully, he sorted parts for 10 muskets into separate piles. He then asked an official to choose one part from each pile. In minutes, the first musket was assembled. Whitney repeated the process until 10 muskets were complete.

The idea of interchangeable parts spread rapidly. Inventors designed machines to produce interchangeable parts for clocks, locks, and many other goods. With such machines, small workshops grew into factories.

Growing Cities

Since colonial times, cities played an important role in American life. The vast majority of people lived in rural areas. However, farmers often sent crops to cities for sale or shipment. Cities were also centers of finance and manufacturing.

During the Industrial Revolution, many people left farms to work in factories. Older

Cause and Effect

Causes

- British ideas of a spinning mill and powerloom reach the United States
- War of 1812 prompts Americans to make their own goods
- Eli Whitney introduces the idea of interchangeable parts

The Industrial Revolution in the United States

Effects

- Factory system spreads
- Young women and children from nearby farms work in mills
- Growing cities face problems of fire, sewage, garbage, and disease

Effects Today

- United States becomes leader in industrialized world
- Oil is a highly valued natural resource

Graphic Organizer Skills

The Industrial Revolution brought with it many immediate and long-term changes.

1. **Comprehension** What inventions and ideas contributed to the spread of the Industrial Revolution?
2. **Critical Thinking** Do you think the impact of the Industrial Revolution was positive or negative? Give reasons.

Economics

cities expanded rapidly, while new cities sprang up around factories. This movement of the population from farms to cities is called **urbanization**.

Urbanization was a steady but gradual process. In 1800, only 6 percent of the nation's population lived in urban areas. By 1850, the number had risen to 15 percent. Not until 1920 did more Americans live in cities than on farms.

By today's standards, these early cities were small. A person could walk from one end of any American city to the other in 30 minutes. Buildings were only a few stories tall. As the factory system spread, the nation's cities grew.

Hazards

Growing cities had many problems. Dirt and gravel streets turned into mudholes when it rained. Cities had no sewers, and people threw garbage into the streets. A visitor to New York reported:

> "The streets are filthy, and the stranger is not a little surprised to meet the hogs walking about in them, for the purpose of devouring the vegetables and trash thrown into the gutter."

In these dirty, crowded conditions, disease spread easily. Epidemics of yellow fever or cholera (KAHL er uh) raged through cities, killing hundreds.

Fire posed another threat to safety. If a sooty chimney caught fire, the flames quickly spread from one wooden house to the next. Rival volunteer companies often competed to get to a blaze first. Sometimes, they fought each other instead of the fire!

Attractions

Cities had attractions, too. Theaters, museums, and circuses created an air of excitement. In New York City, P. T. Barnum exhibited rare animals at his American Museum.

In rural areas, people depended on door-to-door peddlers for ready-made goods. In cities, people could shop in fine stores that sold the latest fashions from Europe. Some offered modern "ready-to-wear" clothing. One store in New York City advertised that "gentlemen can rely upon being as well fitted from the shelves as if their measures were taken."

Most women continued to sew their own clothes. However, they enjoyed visiting hat shops, china shops, shoe stores, and "fancy-goods" stores.

★ Section 1 Review ★

Recall

1. **Identify** **(a)** Industrial Revolution, **(b)** Samuel Slater, **(c)** Moses Brown, **(d)** Francis Cabot Lowell, **(e)** Boston Associates, **(f)** "Lowell girls," **(g)** Eli Whitney.
2. **Define** **(a)** spinning jenny, **(b)** capitalist, **(c)** factory system, **(d)** interchangeable parts, **(e)** urbanization.

Comprehension

3. Describe three ways the Industrial Revolution changed life.
4. How did industry move from Britain to the United States?
5. What were conditions like in the Lowell mills?

Critical Thinking and Writing

6. **Drawing Conclusions** Why were both inventors and capitalists needed to bring about the Industrial Revolution?
7. **Understanding Causes and Effects** How did the building of factories encourage the growth of cities?

History AND YOU

Activity **Writing a Letter** The time is 160 years ago. You are the same age you are now, but instead of being in school, you are working in the Lowell mills. Write a letter home describing how you feel about working in a factory to help support your family.