Step-by-Step Instruction

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.

■ Understand why Britain was the starting point for the Industrial Revolution.
■ Describe the changes that transformed the textile industry.
■ Explain the significance of the transportation revolution.

Prepare to Read

Build Background Knowledge
Ask students to recall which of the events leading to the Industrial Revolution took place in Britain. (steam engine, improved iron) Then ask them to predict why Britain took the lead in the Industrial Revolution.

Set a Purpose

■ WITNESS HISTORY Read the selection aloud or play the audio.
- [Audio] Witness History Audio CD, Riding the Railway
- Ask Why did the ride seem so strange to Fanny Kemble? (There was no animal pulling them along—just a machine) Ask students to predict why railways would be such an important development.

■ 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 2 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. T21). As they read, have students fill in the concept web showing factors that led to Britain’s early lead in industry.

Vocabulary Builder

Use the information below and the following resources to teach the high-use word from this section.

High-Use Word Definition and Sample Sentence
Decades, p. 615 (21-year periods)

Britain Leads the Way

Objectives
• Understand why Britain was the starting point for the Industrial Revolution.
• Describe the changes that transformed the textile industry.
• Explain the significance of the transportation revolution.

Terms, People, and Places
- capital
- enterprise
- entrepreneur
- putting-out system
- Manchester
- Eli Whitney
- Liverpool

Riding the Railway

One of the most important developments of the Industrial Revolution was the creation of a countrywide railway network. The world’s first major rail line went from Liverpool to Manchester in England. Fanny Kemble, the most famous actress of the day, was one of the first passengers.

“...we were introduced to the little engine which was to drag us along the rails. This wondrous little animal, ... started at about ten miles an hour. ... You can’t imagine how strange it seemed to be journeying on thus, without any visible cause of progress other than the magical machine...”

Focus Question: What key factors allowed Britain to lead the way in the Industrial Revolution?

Vocabulary Builder

Use the information below and the following resources to teach the high-use word from this section.

High-Use Word Definition and Sample Sentence
Decades, p. 615 (21-year periods)

The Industrial Revolution Begins
The Effects of Demand and Capital In the 1700s, Britain had plenty of skilled mechanics who were eager to meet the growing demand for new, practical inventions. This ready workforce, along with the population explosion, boosted demand for goods. In order to increase the production of goods to meet the demand, however, another key ingredient was needed. Money was necessary to start businesses.

From the mid-1660s to 1700s, trade from a growing overseas empire helped the British economy prosper. Beginning with the slave trade, the business class accumulated capital, or money used to invest in enterprises. An enterprise is a business organization in an area such as shipping, mining, railroads, or factories. Many businessmen were ready to risk their capital in new ventures due to the healthy economy.

In addition to the advantages already cited, Britain had a stable government that supported economic growth. While other countries in Europe faced civil wars and other horrors, Britain did not. The government built a strong navy that protected its empire, shipping, and overseas trade. Although the upper class tended to look down on business people, it did not reject the wealth produced by the new entrepreneurs. These entrepreneurs were those who managed and assumed the financial risks of starting new businesses.

Entrepreneurs get capital? (from trade) With whom did the British trade? (America, Canada, the Caribbean, Africa, India, China, the East Indies, Egypt) What were some of the items traded? (slaves, cotton, rum, tobacco, gold, tea, spices) Then ask them to recall what mercantilism was and how it benefited Britain.

Why Britain?

Instruct

- Introduce: Key Terms Ask students to find the key term entrepreneurs (in blue) in the text and define it. Then ask what kinds of social and political conditions are favorable to entrepreneurs and new technology.

Teach

Discuss Britain’s resources. Use the Numbered Heads strategy (TE, p. 123) and ask students to define capital. Ask Where did British entrepreneurs get capital? (from trade) With whom did the British trade? (America, Canada, the Caribbean, Africa, India, China, the East Indies, Egypt)? What were some of the items traded? (slaves, cotton, rum, tobacco, gold, tea, spices) Then ask them to recall what mercantilism was and how it benefited Britain.

Quick Activity

Have students access Web Code: nap-1921 to take the Geography Interactive Audio Guided Tour and then answer the map skills questions in the text.

Independent Practice

Have students fill in the Outline Map Industrial Cities in Great Britain and Ireland, 1800–1850.

Teaching Resources, Unit 4, p. 52

Monitor Progress

As students fill in their concept webs, circulate to make sure they distinguish major and minor factors. For a completed version of the concept web, see Note Taking Transparencies, 128.

Circulate to make sure students are filling in their Outline Maps accurately. Administer the Geography Quiz.

Teaching Resources, Unit 4, p. 53

Answers

Britain’s natural and human resources, technological lead, demand for goods due to increased population, access to capital, and social and political conditions

Map Skills

1. Review locations with students.
2. Norwich, Ipswich, Exeter
3. Rivers were used to transport goods to and from factories and as power sources.

Chapter 19 Section 2 613
The Textile Industry/The Transportation Revolution

Instruct
- Introduce: Vocabulary Builder
  Have students read the Vocabulary Builder term and definition. Have students scan the text and identify in which decades the spinning jenny and cotton gin were each invented. (1760s, 1790s) Point out that the Industrial Revolution triggered a chain reaction in which key changes occurred in decades instead of centuries.
- Teach: Display Color Transparency 115: British Cotton Imports and Exports About 1840. Ask Which invention most affected imports? (cotton gin) Which inventions most affected exports? (flying shuttle, spinning jenny, water frame, factory) How did more British imports affect slavery in America? (To grow more cotton to export, planters bought more land and slaves, causing the economy to depend on slave labor.)
- Quick Activity: Display Color Transparency 113: Canals in Britain, 1800. Ask students to trace various routes and ask What was shipped on the canals? (coal, raw materials, finished textiles) What replaced the canals? (railroads)
- Then display Color Transparency 114: The Growth Railways in Great Britain, 1840 and 1850. Ask: Why was the route from Liverpool to Manchester so vital? (Liverpool was a key port; Manchester was a key industrial city.) Have students compare the two maps. Which routes were important on both? Why?
- Independent Practice
  Have students, working in pairs, develop a script for a tour of the early textile factories and workshops of the Industrial Revolution.

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

Answers
- Caption: They made it more productive because things were being done much faster.
- Inventions that increased production and the creation of factories

The Textile Industry Advances
The Industrial Revolution first took hold in Britain’s largest industry—textiles. In the 1800s, cotton cloth imported from India had become popular British merchants tried to organize a cotton cloth industry at home. They developed the putting-out system, also known as cottage industry, in which raw cotton was distributed to peasant families who spun it into thread and then wove the thread into cloth in their own homes. Then the finished pieces were returned to the merchants who paid them by the piece. But this method was too expensive to be operated at home. Instead, manufacturers built long sheds to house the machines. At first, they located the sheds near rapidly moving streams, harnessing the water power to run the machines. Later, machines were powered by steam engines.

Inventions Speed Production
Under the putting-out system, production was slow. As the demand for cloth grew, inventors came up with a string of remarkable devices that revolutionized the British textile industry. For example, John Kay’s flying shuttle enabled weavers to work so fast that they soon outpaced spinners. James Hargreaves solved that problem by producing the spinning jenny in 1764, which spun many threads at the same time. A few years later, in 1769, Richard Arkwright patented the water frame, which was a spinning machine that could be powered by water.

Meanwhile, in America, those faster spinning and weaving machines presented a challenge—how to produce enough cotton to keep up with England. Raw cotton grown in the South had to be cleaned of dirt and seeds by hand, a time-consuming task. To solve this, Eli Whitney invented a machine called the cotton gin that separated the seeds from the raw cotton at a fast rate. He finished the cotton gin in 1793, and cotton production increased exponentially.

Factories Are Born in Britain
The new machines doomed the putting-out system. They were too large and expensive to be operated at home. Instead, manufacturers built long sheds to house the machines. At first, they located the sheds near rapidly moving streams, harnessing the water power to run the machines. Later, machines were powered by steam engines.

Spinners and weavers now came each day to work in these first factories, which housed workers and machines to produce large quantities of goods. Early observers were awed at the size and output of these establishments. One Salisbury noted: “The same [amount] of labor is now performed in one of these structures which formerly occupied the industry of an entire district.”

Checkpoint
- What led to the advancement of the British textile industry?

The Transportation Revolution
As production increased, entrepreneurs needed faster and cheaper methods of moving goods from place to place. Some capitalists invested in turnpikes, private roads built by entrepreneurs who charged travelers a toll, or fee, to use them. Goods traveled faster as a result, and turnpikes

Careers
- Engineer: The people who create cutting-edge inventions that improve our lives are often engineers. Engineers apply science to designing products or processes that are useful to society. The engineering field is divided into four main branches: civil, electrical, mechanical, and chemical. Civil engineers build dams, bridges, highways, large buildings, and power plants. Electrical engineers create everything from computers and electronics to missile guidance systems.

Mechanical engineers work on engines, machinery, air conditioning and heating, automobiles, airplanes, and spacecraft. Chemical engineers help protect the environment and create products such as medicines, plastics, synthetic fibers, metals, and food. There are many other specialties. Engineering requires good math skills, mechanical ability, and an interest in taking things apart and solving problems.
swiftly and cheaply over land. The world's first major rail line, from the rivers did not, allowing factory owners and merchants to ship goods down the course of a river. This meant that tracks could go places where motives to pull carriages along iron rails. The railroad did not have to follow the course of a river. This meant that tracks could go places where rivers did not, allowing factory owners and merchants to ship goods swiftly and cheaply over land. The world's first major rail line, from Liverpool to Manchester, opened in England in 1830. In the following decades, railroad travel became faster and railroad building spread. By 1870, rail lines crossed over Britain, Europe, and North America.

One Thing Leads to Another. As the Industrial Revolution got under way, it triggered a chain reaction. Once inventors developed machines that could produce large quantities of goods more efficiently, prices fell. Lower prices made goods more affordable and thus created more consumers who further fed the demand for goods. This new cycle caused a wave of economic and social changes that dramatically affected the way people lived.

Checkpoint. Why was the development of railroads important to industrialization?

Canals Boom During the late 1700s and early 1800s, factories needed an efficient, inexpensive way to receive coal and raw materials and then to ship finished goods to market. In 1769, when the Bridgewater canal opened, it not only made a profit from tolls, but it cut in half the price of coal in Manchester. The success of this canal set off a canal-building frenzy. Entrepreneurs formed companies to construct canals for profit. Not all the canals that were built had enough traffic to support them, however, and bankruptcy often resulted. Then, beginning in the 1830s, canals lost their importance as steam locomotives made railroads the new preferred form of transportation.

Welcome the Steam Locomotive. It was the invention of the steam locomotive that made the growth of railroads possible. In the early 1800s, pioneers like George Stephenson developed steam-powered locomotives to pull carriages along iron rails. The railroad did not have to follow the course of a river. This meant that tracks could go places where rivers did not, allowing factory owners and merchants to ship goods swiftly and cheaply over land. The world's first major rail line, from Liverpool to Manchester, opened in England in 1830. In the following decades, railroad travel became faster and railroad building spread. By 1870, rail lines crossed over Britain, Europe, and North America.

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Checkpoint Why was the development of railroads important to industrialization?

Terms, People, and Places
1. For each term, person, or place listed at the beginning of the section, write a sentence explaining its significance.

Note Taking
2. Reading Skill: Identify Causes and Effects. Use your completed concept webs to answer the Focus Question: What was the significance of new machines to the textile industry?

Comprehension and Critical Thinking
3. Analyze Information. Explain how each of the following helped contribute to demand for consumer goods in Britain: (a) population explosion, (b) general economic prosperity.

4. Determine Relevance. What was the significance of new machines to the textile industry?

5. Summarize. Explain how advances in transportation contributed to Britain's global trade.

Progress Monitoring Online
Web Code: naa-1921

Vocabulary Builder
 decade—(adjective) a ten-year period

Checkpoint Why was the development of railroads important to industrialization?

Assess and Reteach

Assess Progress
- Have students complete the Section Assessment.
- Administer the Section Quiz.
- To further assess student understanding, use Progress Monitoring Transparencies, 80

Reteach
If students need more instruction, have them read the section summary.

Reading and Note Taking Study Guide, p. 176
Adapted Reading and Note Taking Study Guide, p. 176
Spanish Reading and Note Taking Study Guide, p. 176

Extend
See this Chapter's Professional Development pages for the Extend Online activity on the transportation revolution.

Answer
They allowed factory owners to ship raw materials and products quickly over land, not just by water.

Quick Write: Create a Flowchart. Flowcharts are helpful tools to help you write an explanatory essay. Create a flowchart to show the changes that occurred in the textile industry. Be sure that the sequence of events is clear.

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