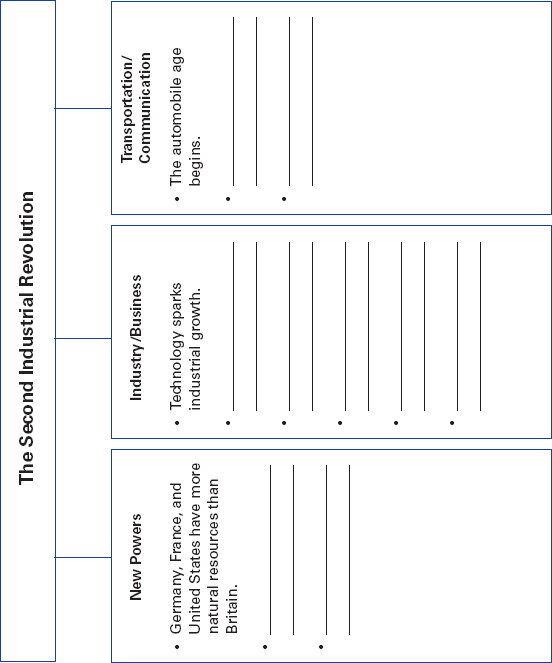
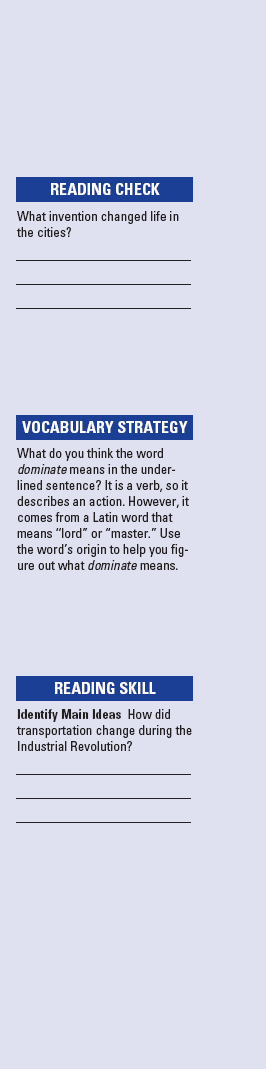
Name Class Date



**Focus Question:** How did science, technology, and big business promote  
industrial growth?

*As you read this section in your textbook, complete the following chart to identify  
main ideas about the major developments of the Industrial Revolution. Some items  
have been completed for you.*



Name Class Date



For a while, Britain was the world’s industrial leader. By the  
mid-1800s, however, Germany and the United States had  
become the new leaders. These nations had much more coal,  
iron, and other natural resources than Britain did. They also  
were able to use British experts and technology. As in Britain,  
cities in the new industrial nations grew quickly.

Technology helped industry grow. **Henry Bessemer**invented a new way to make steel from iron. **Alfred Nobel**invented dynamite for use in construction. **Michael Faraday**created the first **dynamo,** a machine that makes electricity.  
Soon electricity replaced steam as the main power source for  
industry. In the 1870s, the American inventor **Thomas Edison**developed the electric light bulb. Soon entire cities were lit  
with electric lights. Factories could now operate at night and  
produce more goods. The use of **interchangeable parts** and the  
**assembly line** made production faster and cheaper, too.

Technology also changed transportation and communica-  
tion. Steamships replaced sailing ships. Trains quickly con-  
nected cities and brought raw materials to factories. The  
invention of the internal combustion engine led to the mass  
production of automobiles. In 1903, **Orville and Wilbur  
Wright** launched the air age by flying a plane for a few sec-  
onds. The telegraph and telephone made the exchange of  
information nearly instantaneous. **Guglielmo Marconi**invented the radio, a big part of today’s global communication  
network.

These new technologies needed large amounts of money.  
To get this money, owners sold **stock,** or shares in their compa-  
nies, to investors. These businesses became giant **corporations**.  
Others formed business groups called **cartels.** By the late  
1800s, what we call “big business” came to dominate industry.

**Review Questions**

**1.** How did Germany and the United States become industrial  
leaders?

**2.** What new form of energy changed cities and factories?

Name Class Date



**Focus Question:** How did the Industrial Revolution change life in  
the cities?

*As you read this section in your textbook, complete the following outline to identify  
main ideas and supporting details about how the Industrial Revolution changed life  
in the cities. Some items have been completed for you.*

**I. Medicine and the population explosion**

**A.** The fight against disease

**1.**

**2.**

**B.** Hospital care improves.

**1.**

**2.**

**II. Life in the cities**

**A.** City landscapes change.

**1.**

**2.**

**B.**

**1.**

**2.**

**C.**

**1.**

**2.**

**D.**

**1.**

**2.**

**III. Working-class struggles**

**A.**

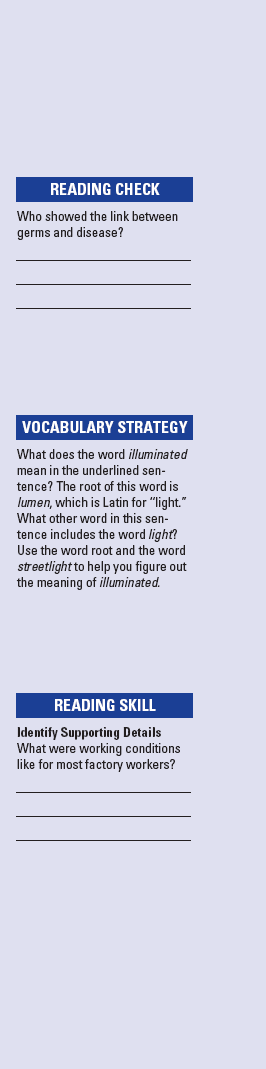
**1.**

**2.**

**B.**

**1.**

**2.**

Name Class Date



Between 1800 and 1900, the population of Europe more than  
doubled. This was due to advances in medicine that slowed  
death rates. In the fight against disease, scientists studied **germ  
theory.** They believed that certain germs might cause specific  
diseases. In 1870, French chemist **Louis Pasteur** showed the  
link between germs and disease. German doctor **Robert Koch**identified the cause of tuberculosis, a deadly lung disease.  
British hospital reformer **Florence Nightingale** raised stan-  
dards of care and cleanliness. British surgeon **Joseph Lister** dis-  
covered that antiseptics prevent disease. As people understood  
what causes disease, they practiced better hygiene. Disease  
decreased and fewer people died.

At this time, cities underwent big changes in Europe and the  
United States. The largest **urban renewal** project took place in  
Paris in the 1850s. Old, crowded areas of the city were replaced  
with wide avenues and grand public buildings. Steel made it  
possible to build tall buildings called skyscrapers. Paved streets  
helped make cities more livable. Electric streetlights illuminated  
the night and increased safety. Huge new sewage systems made  
cities healthier. City planners knew they needed to provide  
clean water. These acts helped cut death rates.

Despite these efforts, cities were still harsh places for the  
poor. In the worst slums, whole families lived in a single room.  
However, millions of people still moved to the cities. They  
came to get work, for entertainment, and for an education.

Most people worked long hours in factories, in unsafe cir-  
cumstances for low wages. Workers protested these terrible  
conditions. They formed **mutual-aid societies** to help sick or  
injured workers. They also organized unions. Pressured by  
unions, reformers, and working-class voters, governments  
passed laws that improved working conditions. Wages varied,  
but overall, the **standard of living** for most workers did rise.

**Review Questions**

**1.** How did advances in medicine increase population?

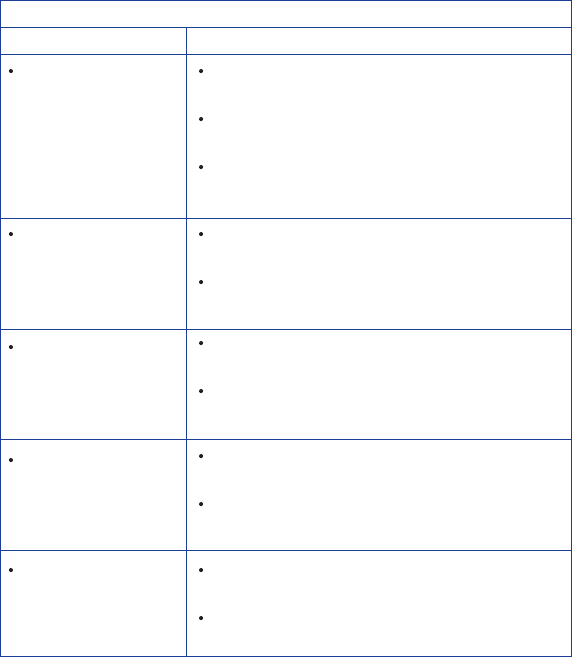
**2.** How did new sewage systems make city life healthier?

Name Class Date



**Focus Question:** How did the Industrial Revolution change the old social  
order and long-held traditions in the Western world?

*As you read this section in your textbook, complete the following table. List new  
issues in the first column and write two supporting details for each issue in the  
second column. Some items have been completed for you.*



**Changes in Social Order and Values**

**Change**

**Issue**

Upper class: old nobility, new industrialists,  
business families

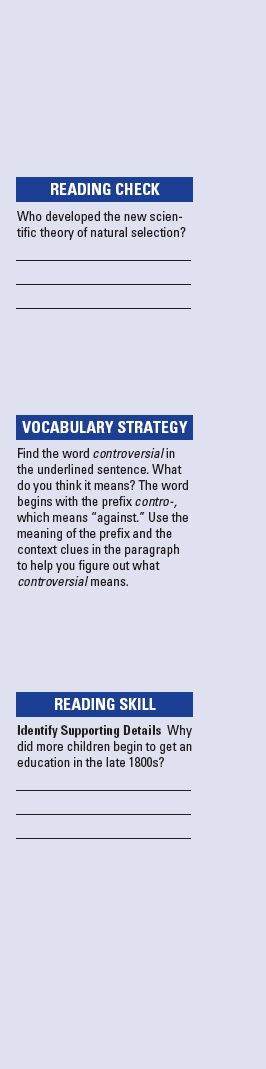
New social order

Growing middle class develops its own way  
of life.

Rights for women

Growth of public  
education

New directions in  
science

Name Class Date



In the late 1800s, many new issues challenged the old social  
order. For centuries, mainly the two classes had been nobles  
and peasants. Now a more complex social structure developed  
with several social classes. The new upper class included very  
rich business families. Below the upper class was a growing  
middle class and then a struggling lower middle class. At the  
bottom were workers and peasants. The middle class had its  
own values and way of life, including a **cult of domesticity.**This encouraged women to stay home and care for the family.

Demands for women’s rights also challenged the old social  
order. Women sought fairness in marriage, divorce, and prop-  
erty laws. In the United States, reformers such as **Elizabeth  
Cady Stanton** and **Sojourner Truth** worked for **women’s  
suffrage,** or the right to vote. Women’s groups also supported  
the **temperance movement,** a campaign to limit or ban the use  
of alcoholic beverages.

Attitudes toward education changed, too. People believed  
that education would create better workers. Reformers per-  
suaded many governments to set up public schools and require  
basic education. Because of this, more children got an education.

New ideas in science also brought change. **John Dalton**developed atomic theory. However, the most controversial new  
idea came from British naturalist **Charles Darwin.** It upset  
many people, who disagreed with his theory. Darwin thought  
that all forms of life evolve over millions of years. His theory of  
natural selection explains how members of each species com-  
pete to survive. Some people used a twisted version of  
Darwin’s theory, called Social Darwinism, to support **racism.**

Religion continued to be a force in Western society. Life in  
industrial societies could be very cruel for some. Religious  
groups tried to help the working poor. For example, the **social  
gospel** movement urged Christians to work to improve society.

**Review Questions**

**1.** Who was included in the new upper class of the late 1800s?

**2.** What rights did women want?

Name Class Date



**Focus Question:** What artistic movements emerged in reaction to the  
Industrial Revolution?

*As you read this section in your textbook, complete the following table. Identify  
supporting details about the major features of artistic movements of the 1800s. Some  
items have been completed for you.*

Charles Dickens

Victor Hugo

William Wordsworth

William Blake

Samuel Taylor  
Coleridge

**Major Figures**

To capture the first fleeting  
impression made by a scene  
or object on the viewer’s eye

To represent the world as it  
was, without romantic  
sentiment

Rebellion against reason

Emphasis on imagination,  
freedom, and emotion

Use of direct language,  
intense feelings, glorification  
of nature

**Goals/Characteristics**

Postimpressionism

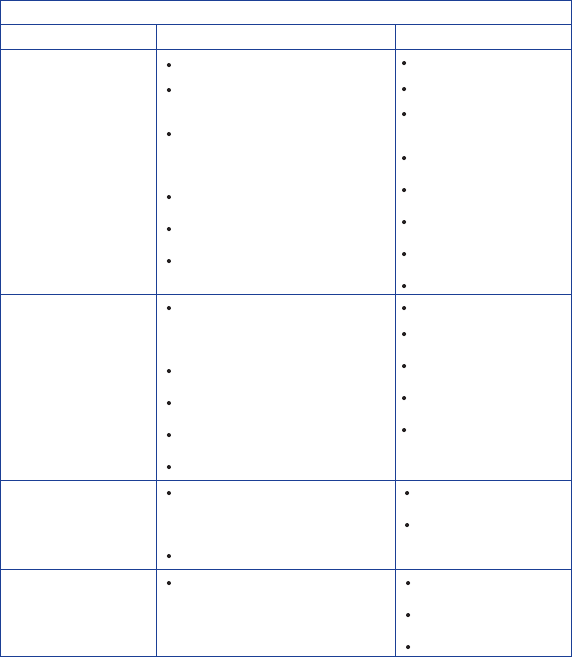
Impressionism

Realism

Romanticism

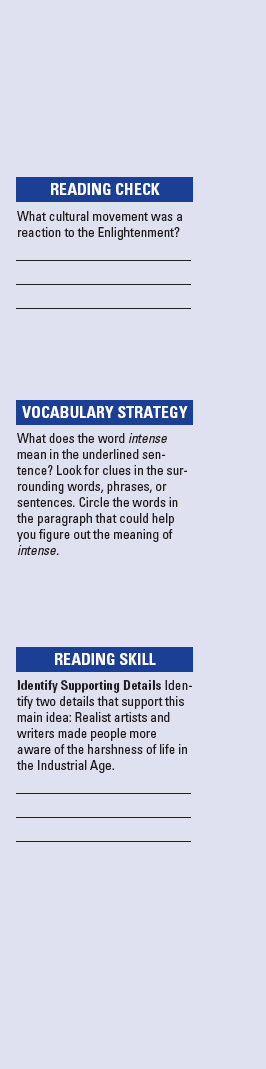
**Movement**

**Major Artistic Movements of the 1800s**





**110**

Name Class Date



From about 1750 to 1850, a cultural movement called  
**romanticism** emerged. It was a reaction against the ideas of  
the Enlightenment. Romanticism emphasized imagination,  
freedom, and emotion. The works of romantic writers included  
direct language, intense feelings, and a glorification of nature.  
**William Wordsworth, William Blake,** and **Lord Byron** were  
major romantic poets. Romantic writers, such as **Victor Hugo,**were inspired by history, legend, and folklore. Composers also  
tried to stir deep emotions. The passionate music of **Ludwig  
van Beethoven** used an exciting range of sound. Painters, too,  
broke free from the formal styles of the Enlightenment. They  
used bold brush strokes and colors to capture the beauty and  
power of nature.

However, in the mid-1800s, an art movement called **realism**took hold. Realists wanted to portray the world as it truly was.  
They rejected romantic beauty. Their works made people aware  
of the often bleak life of the Industrial Age. Many realists  
wanted to improve life for their subjects. The novels of **Charles  
Dickens,** for example, shocked readers with images of  
poverty, mistreatment of children, and urban crime. Painters,  
such as **Gustave Courbet**, painted ordinary working-class men  
and women.

A new art form, photography, also developed. **Louis  
Daguerre** made some of the first successful photographs.  
Photography made some artists question the purpose of realist  
paintings when a camera made exact images. By the 1870s, one  
group started a new movement called **impressionism**. Artists  
such as **Claude Monet** wanted to capture the first impression  
made by a scene on the viewer’s eye. By focusing on visual  
impressions, artists showed familiar subjects in unfamiliar  
ways. Later, the postimpressionist painter **Vincent van Gogh**experimented with sharp brush lines and bold colors.

**Review Questions**

**1.** What qualities did romantics include in their works?

**2.** What was the goal of the impressionist artists?