

**The Industrial Revolution****Lesson 1**

# The Beginnings of Industrialization

**Key Terms and People**

**Industrial Revolution** great increase in machine production that began in England in the 18th century

**enclosure** large closed-in field for farming

**crop rotation** planting a different crop in the same field each year to allow the soil to regenerate

**industrialization** process of developing machine production of goods

**factors of production** conditions needed to produce goods and services

**factory** building where goods are made

**entrepreneur** person who organizes, manages, and takes on the financial risk of a business enterprise

**Henry Bessemer** British engineer who developed a way to mass-produce steel cheaply

**Before You Read**

In the last lesson, you read about romanticism and realism in the arts.

In this lesson, you will read about the beginning of the Industrial Revolution.

**As You Read**

Answer questions in a chart to note important events in Britain's industrialization.

**INDUSTRIAL REVOLUTION BEGINS IN BRITAIN****How did the Industrial Revolution begin?**

The **Industrial Revolution** was the great increase in production that began in England during the 18th century. Before the Industrial Revolution, people made most goods by hand. By the middle of the 1700s, more and more goods were made by machines.

The Industrial Revolution began with an agricultural revolution. In the early

1700s, large landowners in Britain bought much of the land that had been owned by poorer farmers. The landowners collected these lands into large fields closed in by fences or hedges. These fields were called **enclosures**. Many of the poor farmers who lost their lands became tenant farmers. Others gave up farming and moved to the cities. The growth in the number of people in cities to work in factories helped create the Industrial Revolution.

Lesson 1, *continued*

New farm methods made farmers more productive. For example, Jethro Tull invented a seed drill that made planting more efficient. Farmers also practiced **crop rotation**. Crop rotation is the practice of planting a different crop in the same field each year. This improves the quality of the soil.

**Industrialization** is the process of developing machine production of goods. For several reasons, Britain was the first country to industrialize.

Great Britain had all the resources needed for industrialization. These resources included coal, water, iron ore, rivers, harbors, and banks. Britain also had all the **factors of production** that the Industrial Revolution required. These factors of production included land, labor (workers), and capital (wealth).

1. Why was Britain the first country to industrialize?

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### INVENTIONS SPUR INDUSTRIALIZATION

#### **What inventions helped change business?**

The Industrial Revolution began in the textile industry. Several new inventions helped businesses make cloth and clothing more quickly. Richard Arkwright invented the water frame in 1769. It used water power to run spinning machines that made yarn. In 1779, Samuel Compton invented the spinning mule, which made better thread. In 1787, Edmund Cartwright developed the power loom. The power loom was a machine that sped up the cloth-making process.

These new inventions were large and expensive machines. They needed large

**factories** to house and run these machines. **Entrepreneurs**, or people who start and manage businesses, built the factories near rivers because these machines ran on water power.

2. How was the textile industry changed by the new inventions?

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### IMPROVEMENTS IN TRANSPORTATION; THE RAILWAY AGE BEGINS

The invention of the steam engine in 1705 brought in a new source of power. The steam engine used fire to heat water and produce steam. The power of the steam drove the engine. Eventually steam-driven engines were used to run factories and shipping boats.

Starting in the 1820s, steam brought a new burst of industrial growth. George Stephenson, a British engineer, set up the world's first railroad line. It used a steam-driven locomotive. **Henry Bessemer**, a British engineer, devised a way to make steel in large quantities. Railroad rails were made using the inexpensive steel. Soon, railroads were being built all over Britain.

The railroad boom helped business owners move their goods to market more quickly. These changes created thousands of new jobs in several different industries. Millions of British people, including the middle class, also enjoyed the trains. Even Queen Victoria regularly traveled by train.

3. What effects did the invention of the steam engine have?

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**Lesson 1, *continued***

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As you read this lesson, make notes in the chart to explain how each factor listed contributed to an Industrial Revolution in Great Britain.

1. Agricultural revolution	
2. Abundant natural resources	
3. Political stability	
4. Factors of production	
5. Technological advances in the textile industry	
6. Entrepreneurs	
7. Building of factories	
8. Railroad boom	

**The Industrial Revolution****Lesson 2**

# Industrialization

## Case Study: Manchester

**Key Terms and People**

**urbanization** city building and the movement of people to cities

**middle class** social class of skilled workers, professionals, business people, and wealthy farmers

**Before You Read**

In the last lesson, you read about the Industrial Revolution.

In this lesson, you will read about some of its effects.

**As You Read**

Use an outline to organize the summaries' main ideas and details.

**INDUSTRIALIZATION CHANGES LIFE****How did industrialization change people's ways of life?**

Industrialization brought many changes to the British people. More people could use coal to heat their homes, eat better food, and wear better clothing.

Another change was **urbanization**—city building and the movement of people to cities. For centuries, most people in Europe had lived in the country. By the 1800s, more and more people lived in cities, where they had come to find jobs.

Living conditions were bad in crowded cities. Many people could not find good housing, schools, or police protection. Filth, garbage, and sickness were part of life in the slums. A person in a city could expect to live 17 years. In

the countryside, a person could expect to live 38 years.

Working conditions were also bad. The average worker spent 14 hours a day on the job, 6 days a week. Many workers were killed or seriously injured in accidents.

1. What were major changes in living conditions and working conditions?

**CLASS TENSIONS GROW; POSITIVE EFFECTS OF THE INDUSTRIAL REVOLUTION****Who were the members of the middle class?**

Some people's lives were improved in the new economy. The Industrial Revolution created new wealth for the

**Lesson 2, continued**

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**middle class**, which included skilled workers, professionals, business people, and wealthy farmers. People in the middle class enjoyed comfortable lives in pleasant homes. This class began to grow in size. Some people grew wealthier than the nobles who had been in control for many centuries.

The Industrial Revolution had many good effects. It created wealth. It created jobs for workers and over time helped many of them live better lives. It produced better diets, better housing, and better clothing at lower prices.

2. How did industrialization affect the middle class?

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**THE MILLS OF MANCHESTER**

**What changes occurred in Manchester?**

The English city of Manchester is a good example of how industrialization changed society. Rapid growth made the

city crowded and filthy. The factory owners risked their money and worked long hours to make their businesses grow. In return, they enjoyed huge profits and built huge houses. The workers also worked long hours but had few benefits. Many of these workers were children, some only six years old. The British government did not limit the use of children as workers until 1819.

The large amount of industry in Manchester caused environmental problems. Coal smoke and cloth dyes from the factories polluted the air and water. Yet Manchester also created many jobs, a variety of consumer goods, and great wealth.

3. Why is Manchester a good example of how industrialization changed cities?

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**Lesson 2, continued**

As you read this case study, answer the questions to consider how industrialization changed the way people lived and worked.

<b>What changes did industrialization bring about for the following groups of people?</b>	
1. Poor city dwellers	
2. Factory workers	
3. Wealthy merchants, factory owners, shippers	
4. Children	
5. Lower middle class of factory overseers and skilled workers	
6. Large landowners and aristocrats	
<b>What were the long-term consequences of the Industrial Revolution for each of the following?</b>	
7. The environment	8. Education

**The Industrial Revolution****Lesson 3**

# Industrialization Spreads

**Key Terms and People**

**mass production** system of manufacturing large quantities of identical items

**interchangeable parts** machine parts that are identical and manufactured by machine

**assembly line** each worker does one step of a manufacturing processes

**division of labor** different workers doing individual and different tasks

**specialization** separation of tasks

**economic interdependence** people in a society relying on other people

**stock** right of ownership in a company called a corporation

**corporation** business owned by stockholders who share in its profits but are not responsible for its debts

**Before You Read**

In the last lesson, you read about some of the effects of industrialization.

In this lesson, you will see how industrialization spread to other nations.

**As You Read**

Use a chart to compare industrialization in the United States, in Europe, and around the world.

**INDUSTRIAL DEVELOPMENT IN THE UNITED STATES****How did industrialization begin in the United States?**

The United States was one of the first to industrialize after Great Britain. Like Britain, the United States had a great deal of coal and water to create power. There was also plenty of iron. In addition, immigrants in the United States created a large supply of workers.

The United States also benefited from conflict with Britain. During the War of 1812, Britain stopped shipping goods to

the United States. As a result, American industries began to make many of the goods that Americans wanted.

In the United States, industrialization began in the textile industry. In 1789, Samuel Slater, a British worker, brought the secret of Britain's textile machines to North America. Slater built a machine to spin thread.

In 1813, a group of Massachusetts investors built textile factories in Waltham, Massachusetts. Just a few years later they built even more factories in the Massachusetts town of Lowell.



Lesson 3, *continued*

Thousands of workers, mostly young girls, came to work in the factories.

Americans developed the system of making a large amount of the same product, called **mass production**. Machines use identical parts, called **interchangeable parts**. These parts can be mass produced quickly and then assembled so that the machines work exactly the same. Replacement parts are easy to get, and they fit perfectly.

Changes were made in factories, too. Products moved from worker to worker on an **assembly line**. Each worker did one step of the work. Having different workers do different tasks is called **division of labor**. Workers learn a specific task. Separating tasks to make a process more efficient is called **specialization**.

Industrialization caused **economic interdependence**. People needed the resources of other people. People did not have to make everything they needed.

Businesses needed huge sums of money to do big projects. To raise money, companies sold **stock**. Stocks are shares of ownership in a company. All those who held stock were part owners of the company. This form of business organization is called a **corporation**.

1. How did industrialization begin in the United States?

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### CONTINENTAL EUROPE INDUSTRIALIZES

**Where did industrialization begin in continental Europe?**

Industrial growth also spread from England to the European continent. Belgium was the first to industrialize.

It was rich in iron and coal. The country also had good waterways.

Germany was divided politically until the late 1800s. However, the Ruhr Valley in western Germany was rich in coal. It became a leading industrial region.

Industrial growth did not occur in France until after 1830. It was helped by the government's construction of a large network of railroads. Austria-Hungary and Spain faced transportation problems that held them back from industrializing.

2. Which nation industrialized first, and why?

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### THE IMPACT OF INDUSTRIALIZATION

**How did industrialization change the world?**

The countries of Europe soon began to take advantage of Africa and Asia. Europeans wanted to use these lands as sources of raw materials for their factories.

The European nations took control of lands in many areas of the world outside of Europe. This practice is called imperialism.

The Industrial Revolution that took place in the 1700s and 1800s changed life forever in the countries that industrialized. Problems caused by industrialization led to movements for social reform.

3. How did industrialization lead to imperialism?

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**Lesson 3, continued**

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As you read this lesson, take notes to answer the questions about industrialization in different parts of the world.

<b>Industrial development in the United States paralleled industrialization in Britain.</b>	
1. What were some favorable conditions that sparked industrialization in both Britain and the United States?	
2. What factors led to the great expansion of U.S. industry in the late 1800s?	
<b>Industrialization eventually reached continental Europe.</b>	
3. How did the Napoleonic wars affect the development of industry in Europe?	
4. How would you characterize the expansion of industry throughout Europe during the early 1800s?	
<b>Industrialization revolutionized every aspect of society worldwide.</b>	
5. How did industrialization shift the world balance of power?	
6. In what ways did industrialization benefit society?	

**The Industrial Revolution****Lesson 4**

# Reforming the Industrial World

**Key Terms and People**

**laissez faire** economic theory that argues that governments should not interfere with business affairs

**Adam Smith** philosopher who defended laissez-faire economics

**capitalism** economic system in which people invest money to make a profit

**utilitarianism** belief that an idea is only as good as it is useful

**socialism** belief that businesses should be owned by society as a whole

**Karl Marx** economic thinker who wrote about a radical form of socialism

**communism** form of socialism in which all production is owned by the people

**anarchism** belief that people should be able to develop freely without government interference

**union** organized groups of workers that bargain with business owners to get better pay and working conditions

**strike** organized refusal to work

**Before You Read**

In the last lesson, you read about how industrialization spread to different nations.

In this lesson, you will learn about new ideas and reforms.

**As You Read**

Use a chart to summarize the characteristics of capitalism and socialism.

**THE PHILOSOPHERS OF INDUSTRIALIZATION****What is capitalism?**

Industrialization led to new ways of thinking about society. Some economists thought that the government should leave business owners alone. This view is called **laissez faire**.

**Adam Smith** argued that governments should not put limits on business. He and others, including British economists

Thomas Malthus and David Ricardo, supported a system called **capitalism**. In a capitalist economy, people invest their money in businesses to make a profit.

Smith and the others believed that society would benefit over time from this system. Supporters of laissez faire opposed laws to protect workers.

1. How does capitalism work?

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Lesson 4, *continued***THE RISE OF SOCIALISM;  
MARXISM: RADICAL SOCIALISM****What is socialism?**

Other thinkers challenged capitalism. One group was called the **utilitarians**. They thought it was unfair that workers should work so hard for such little pay and live in such poor conditions.

Some thinkers wanted society as a whole to own businesses. This way, all people would enjoy the benefits of increased production. This view—called **socialism**—grew out of a belief in progress and a concern for justice.

A German thinker named **Karl Marx** proposed a form of socialism that became known as Marxism. He said that factory owners and workers would struggle for power. Over time, he said, the capitalist system would destroy itself.

Marx wrote *The Communist Manifesto*. It described **communism**, a form of socialism in which production is controlled by the people.

**Anarchism** also gained popularity during this time. Anarchists believe government is harmful. Some believers went too far. Between 1890 and 1901, a number of politicians were killed and terrorist acts were carried out.

2. How are the ideas of capitalism and socialism different?

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**LABOR UNIONS AND REFORM  
LAWS****How did workers take action to  
improve their lives?**

While thinkers discussed these ideas, workers fought to improve their lives. Many workers joined **unions**. A union is a group of workers that tries to bargain with employers for better pay and better

working conditions.

When employers resisted these efforts, the workers went on **strike**, or refused to work. British and American workers struggled for a long time for the right to form unions.

Britain also passed laws to limit how much work women and children could do. Groups in the United States pushed for similar laws.

3. How did both the government and workers themselves try to improve workers' lives?

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**THE REFORM MOVEMENT  
SPREADS****What other reforms were taking place  
at this time?**

Ending slavery was a major reform movement of the 1800s. The British Parliament ended the slave trade in 1807. It then abolished slavery in British territories in 1833.

Slavery was finally abolished in the United States in 1865, after the Civil War. Spain ended slavery in Puerto Rico in 1873 and in Cuba in 1886. Brazil was the last country to ban slavery, in 1888.

Women were active in many reform movements. Many women fought for equal rights for women. In 1888, women from around the world formed a group dedicated to this cause.

Reformers took on other projects as well. They pushed to improve education and the conditions in prisons.

4. Name two major reform movements of the 1800s.

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**Lesson 4, *continued***

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As you read about the age of reforms, take notes to answer the questions about the ideas of the philosophers and reformers of the Industrial Revolution.

<b>The Economic Philosophers</b>	<b>What were the basic ideas of each philosopher?</b>
1. Adam Smith	
2. Thomas Malthus	
3. David Ricardo	
<b>The Social Reformers</b>	<b>How did each reformer try to correct the ills of industrialization?</b>
4. John Stuart Mill	
5. Robert Owen	
6. Charles Fourier and Henri de Saint-Simon	
7. Karl Marx and Friedrich Engels	
8. William Wilberforce	
9. Jane Addams	
10. Horace Mann	