Industrial Revolution, 1750–1900

One man draws out the wire, another straightens it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head; . . . and the important business of making a pin is, in this manner, divided into about eighteen distinct operations.

—Adam Smith, Wealth of Nations (1776)

The quote above describes the rigid structure of early factory work, one of the most enduring images of the Industrial Revolution. The term industrialization refers not only to the increased mechanization of production, but also to the social changes that accompanied this shift. The Industrial Revolution began in Britain in the eighteenth century, and then it spread to other countries in northwest Europe and North America in the nineteenth century. Still later in the nineteenth century, it spread to Japan and Russia. In order to appreciate the impact of industrialization, it is important to understand its causes as well as what life was like prior to industrialization.

Preindustrial Societies

During the early eighteenth century, most families in Britain lived in rural areas, grew most of their own food, and made most of their own clothes. For centuries, wool and flax had been raised domestically, and people spun fabrics in their own homes.

However, one result of the East India Company’s dealings with South Asia was that Indian cotton became available in Britain and before long it was in high demand. Wool and flax could not be produced as quickly or in as much quantity to compete with cotton imports. To compete with Indian cotton, investors in Britain began to build their nation’s own cotton cloth industry. Using imported raw cotton produced by slave labor in the Americas, the British developed the cottage industry system, in which merchants provided raw cotton to women who spun it into finished cloth in their own homes.

Home spinning was hard work and did not pay well, but cottage industries gave women weavers a degree of independence. While working in their own homes, they were also within close proximity of their children. But this cottage industry, or putting-out system as it was called, was slow. Inventors demanded faster production, spurring the development of technologies that turned out cloth in more efficient ways.
Causes of Industrialization

The most obvious cause of industrialization was the development of technology. However, technological advances were not the only cause. Population growth and access to resources were other major contributors to Britain’s industrialization. Yet analyzing historical causation is a complex process. Saying “A caused B” is often an oversimplification. Usually, historical causation is an expanding chain of causes and effects. For example, while the development of technology was one cause of industrialization, the growth of industrialization then spurred further advances in technology.

Growth of Technology By the mid-eighteenth century, the **spinning jenny** and the **water frame** reduced the time needed to spin yarn and weave cloth. The spinning jenny, invented by James Hargreaves in the 1760s, allowed a weaver to spin more than one thread at a time. The water frame, patented by Richard Arkwright in 1769, used waterpower to drive the spinning wheel. The water frame was more efficient than a single person’s labor, and this mechanization doomed the household textile cottage industry, as textile production was moved to factories big enough to house these bulky machines. Arkwright was thus considered the father of the **factory system**.

Interchangeable Parts In 1798, Eli Whitney, best known for developing the cotton gin, created a system of **interchangeable parts** for manufacturing firearms for the U.S. military. In Whitney’s system, if a particular component of a machine were to break, the broken component could easily be replaced with a new, identical part. Entrepreneurs adapted this method of making firearms to the manufacture of other products. The system of interchangeable parts was a pivotal contribution to industrial technology. Instead of relying on skilled workers to craft every component of a product, Whitney’s standardized tools allowed unskilled workers to attach a particular piece to a product. This led directly to a **division of labor** among workers. In this system, each worker specializes in a specific task. For example, one worker might a cast a part. Once cast, the part is given to another worker, whose specific job it is to install the part on the finished product, and so on. In the early twentieth century, Henry Ford expanded the concept of the division of labor, developing the moving **assembly line** to manufacture his Model T automobiles.

Steam Engine The new machinery benefitted from a new power source, one more mobile than streams. The version of **steam engine** made by James Watt in 1765 provided an inexpensive way to harness coal power to create steam, which in turn generated energy for machinery in textile factories. A steam-powered locomotive came almost 50 years later and produced power for railway trains.

Just as important was the development of the **steamship** in the late eighteenth century. Steam-powered ships were able to travel quickly upstream on rivers instead of having to sail up or be towed by people and animals along the shore. Steamships revolutionized transportation on lakes and the oceans as well, because ship captains were no longer dependent on winds for power. The need to travel long distances along ocean coasts led to the creation of coaling stations at critical points, such as in Cape Colony in South Africa and various islands in the Pacific.
**Population Growth** Slightly predating the Industrial Revolution during the early 1700s was an *agricultural revolution* resulting in increased productivity. *Crop rotation* (rotating different crops in and out of a field each year) and the *seed drill* (a device that efficiently places seeds in a designated spot in the ground) both increased food production. Additionally, the introduction of the potato from South America contributed more calories to people’s diets. As nations industrialized, their populations grew because more food was available to more people. And because of improved medical care, infant mortality rates declined and people lived longer. With these demographic changes, more people were available to work in factories and to provide a market for manufactured goods.
Urbanization However, the growing population would not remain in rural areas. Migration was sometimes the best of bad options. English towns had traditionally allowed farmers to cultivate land or tend sheep on government property known as “the commons.” However, this custom ended with the enclosure movement as the government fenced off the commons in order to give exclusive use of it to people who paid for the privilege or who purchased the land. Many farmers became landless and destitute. The enclosure movement was thus instrumental in another wave of demographic change—forcing small farmers to move from rural areas to urban areas such as Manchester and Liverpool, and become the new industrial workforce.

Britain’s Advantages Britain had many geographical advantages in the process of industrialization. Located on the Atlantic Ocean with its many seaways, the country was well placed to import raw materials and export finished goods. It also had the geographic luck of being located atop immense coal deposits. Coal was vital to industrialization because when burned it could power the steam engine. The burning of this fossil fuel, an energy source derived from plant and animal remains, was also essential in the process of separating iron from its ore. Iron production (and later steel production) allowed the building of larger bridges, taller buildings, and stronger ships. Coal mining became the major industry of northern and western Britain, including South Wales, Yorkshire, and Lancashire. When the United States industrialized, coal-mining areas developed in West Virginia, Pennsylvania, and Kentucky.

As a colonizing power, Britain also had access to resources available in its colonies, including timber for ships. Largely because of the wealth they accumulated during the trans-Atlantic slave trade, enough British capitalists had excess capital (money available to invest in businesses). Without this capital, private entrepreneurs could not have created new commercial ventures.

Britain, the northeastern United States, and other regions also had a natural network of rivers supplemented by publicly funded canals and harbors. These water routes made transport of raw materials and finished products inexpensive.

Britain also had the world’s strongest fleet of ships, including commercial ships for trade and naval ships for defense. These ships brought agricultural products to Britain to be used to make finished products for consumers.

A final and vital factor that aided industrialization in Britain was the legal protection of private property. Entrepreneurs needed the assurance that the business they created and built up would not be taken away, either by other businesspeople or by the government. Not all nations offered these legal guarantees.

Spread of Industrialization

After Britain industrialized, Belgium, and then France and Germany followed. These countries possessed many of the characteristics that allowed Britain to industrialize, including capital, natural resources, and water transportation.

France and Germany One factor that was not in France’s favor was its sparsely populated urban centers, which limited the amount of labor available
for factories. Another factor was the French Revolution (1789–1799) and subsequent wars involving France and its neighbors, which consumed both the attention and the capital of France’s elites. These factors delayed the Industrial Revolution for France.

Germany was politically fragmented into numerous small states, which delayed its industrialization. However, once Germany unified in 1871, it quickly became a leading producer of steel and coal.

The United States The United States began its industrial revolution in the nineteenth century. By 1900, the United States was a leading industrial force in the world. The construction of railroads, including the Transcontinental Railroad that connected the Atlantic and Pacific oceans when it was completed in 1869, facilitated U.S. industrial growth. Like the canals, the railroads were heavily subsidized by public funds. The nation’s vast natural resources, including timber, coal, and oil, contributed to its development as an industrial nation.

Human capital (the workforce) was also a key factor in America’s success. Political upheaval and widespread poverty brought a large number of immigrants to the United States from Europe and East Asia. These immigrants, as well as migrants from rural areas in the United States, provided the labor force to work in the factories. The development of the telegraph in the 1830s made long-distance communication easy for the first time in history.

A Second Revolution The United States, Great Britain, and Germany were key players in what is known as the second industrial revolution, which occurred in the late nineteenth and early twentieth centuries. The innovations of the first industrial revolution were in textiles, steam power, and iron; the developments of the second industrial revolution were in steel, chemicals, precision machinery, and electronics. The development of chemical techniques to extract kerosene from petroleum in 1847 led to other developments such as the internal combustion engine, which in turn led to automobile and airplane technologies. Similarly, the harnessing of electrical power led to electrification—street lighting and electric street trains in the 1890s. Other technologies followed as well, such as the telephone (1876) and wireless communication and radio (1901).

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<th>Agricultural Products for Trade in the Nineteenth Century</th>
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<tr>
<td><strong>Product</strong></td>
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<td>Wheat</td>
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<tr>
<td>Rubber</td>
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<tr>
<td>Palm Oil</td>
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<tr>
<td>Sugar</td>
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<td>Cattle and Hogs</td>
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<tr>
<td>Cotton</td>
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Japan By the end of the nineteenth century, Japan also began the process of industrialization. Under the Meiji (1868–1912), Japan ended its self-imposed isolation from the rest of the world. It had been alarmed by the advanced navy and armaments produced by the industrial systems of the West—particularly those of Britain and the United States—and how they had humiliated China. Japan’s leaders realized that their country needed to industrialize to protect itself. The leaders hired foreign experts to instruct their workers and business managers about modern industry. However, in replicating the “progress” made by Western countries, the Japanese also replicated some of industrial society’s problems. For example, accounts of abuse and exploitation of female Japanese mill workers are similar to the experiences that British female mill workers had recorded decades earlier. (Test Prep: Write a brief paragraph comparing Japan’s industrialization with developments in the West. See pages 456–457.)

Russia Russia also began to industrialize, focusing particularly on railroads and exports. By 1900, Russia had more than 36,000 miles of railroad, connecting its commercial and industrial areas. The Trans-Siberian Railroad stretched from Moscow to the Pacific Ocean, allowing Russia to trade more easily with countries in East Asia, such as China and Japan. The Russian coal, iron, and steel industries developed with the railroad, mostly in the 1890s. By 1900 Russia had become the fourth largest producer of steel in the world. However, the economy remained overwhelmingly agricultural until after the Communists seized power in 1917.

Effects of the Industrial Revolution

The Industrial Revolution affected every aspect of society, transforming not only the way products were manufactured, but also the nature of work itself. Because of industrialization, people began to move from rural to urban areas, a trend that continued through the twentieth century. By the beginning of the 1900s, British society was more urban than rural. The new workplace and the growth of business created an entirely new class hierarchy. Women and children at every rung of society saw their roles in the family change dramatically.

Effects on Families Prior to industrialization, family members worked in close proximity to one another. Whether women spun fabric in their own homes or landless workers farmed the fields of a landlord, parents and children usually spent their working hours together. Industrialization disrupted this pattern. Industrial machinery was used in large factories, making it impossible to work from home. Thus, family members had to leave their homes and neighborhoods for a long workday in order to earn enough money to survive.

In a factory, work schedules were nothing like they were on a farm or in a cottage industry. The shrill sounds of the factory whistle told workers when they could take a break, obviously a culture shock to ex-farmers who had previously completed tasks according to their own needs and schedules. Considering that workers commonly spent 14 hours a day, six days a week in a factory, exhaustion was common. Some of these exhausted workers operated dangerous heavy machinery. Injuries and death were common.
The low wages of factory workers forced them to send their children to work in the industries also. In the early decades of industrialization, children as young as five worked in textile mills. Because of their small size and nimble fingers, children could climb into equipment to make repairs or into tight spots in mines more easily than could adults. However, the dust from the textile machinery damaged their lungs just as much. Children who worked in coal mines faced even more dangerous conditions, working in oppressive heat and carting heavy loads of coal. Coal dust was even more unhealthy than factory dust, and mine collapses and floods loomed as constant threats to safety.

Source: Thinkstock

Industrialization created new jobs in factories (upper) and offices (lower) that pulled people from rural areas into urban areas, a process that continues around the world today.
Effects on Urban Areas Industrialization increased urbanization (the growth of cities). For the first half of the nineteenth century, urban areas grew rapidly and with little planning by governments. This left a damaging ecological footprint and created inhumane living conditions for the cities’ poorest residents. Working families crowded into shoddily constructed tenement apartment buildings, often owned by factory owners themselves. Tenements were often located in urban slums (areas of cities where low-income families were forced to live), where industrial by-products such as polluted water supplies and open sewers were common. These unsanitary conditions were breeding grounds for diseases such as cholera, dysentery, and tuberculosis.

Effects on Class Structure As industrialization spread, new classes of society emerged in Britain. At the bottom rungs of the social hierarchy were those who labored in factories and coal mines. These slum dwellers were known as the working class. Though they helped construct goods more rapidly, the technology of interchangeable parts and the factory system’s division of labor had deprived workers of the experience of crafting a complete product. In comparison to the craft workers and artisans of earlier generations, workers were low skilled and therefore easily replaceable, at least in the eyes of their managers, who were thus able to pay them lower wages.

Just as industrialization had created low-skilled jobs, it also required people with education and sophisticated skills to manage production of goods. A new middle class emerged, consisting of factory and office managers, small business owners, and professionals. White-collar jobs (those held by office workers) were also created during this time period. Unlike most factory workers, white-collar workers were literate and many could be considered middle class.

At the top of the new class hierarchy were the newly wealthy industrialists and owners of large corporations. These so-called captains of industry soon overshadowed the landed aristocracy as the power brokers and leaders of modern society.

Effect on Women’s Lives The Industrial Revolution affected women in different ways, depending on their class position. Because their families needed the money, working-class women worked in coal mines (until the practice of hiring women for coal mining was declared illegal in Britain in the 1840s) and were the primary laborers in textile factories. Factory owners preferred to hire women because they could pay them half of what they paid men.

Middle-class women were spared factory work, yet in many ways they lived more limited lives than working-class women. Middle-class men had to leave the house and work at an office to provide for their families. If a wife stayed at home, it was an indication that her husband was capable of being the family’s sole provider. Being a housewife thus became a status symbol. By the late 1800s, advertising and consumer culture contributed to a cult of domesticity that idealized the female homemaker. Advertising encouraged women to buy household products that would supposedly make the home a husband’s place of
respite from a harsh modern world. Pamphlets instructed middle-class women on how to care for the home, raise children, and behave in polite society and urged them to be pious, submissive, pure, and domestic. For working-class women the cult of domesticity was even more taxing, as they had to manage the household, care for their children, and work full time.

Industrialization also spurred feminism. When men left a community to take a job, their absence opened up new opportunities for the women who remained home. One political sign of this feminism came in 1848 at Seneca Falls, New York, when 300 people met to call for equality for women.

**Effect on Mass Culture** A culture of consumerism as well as of leisure developed among the working and middle classes of society in Great Britain. Consumption needed to keep up with production, so began to advertise heavily, particularly to the middle class whose members had some disposable income, or money that can be spent on nonessential goods.

Leisure activities such as biking and boating became popular during the late 1800s. Companies encouraged their workers to participate in athletics, because they believed that sports rewarded virtues such as self-discipline and playing by the rules. The sales of athletic equipment also generated business for those who made everything from soccer balls to sports stadiums.

Perhaps because workers spent most of their waking hours in a bleak industrial environment, material goods and leisure entertainment became important escapes. In Europe, soccer (known there as football), became popular, while baseball dominated sports in the United States.

**Effects on the Environment** The Industrial Revolution was powered by energy, specifically, the burning of fossil fuels such as coal, petroleum, and natural gas. Although burning coal, for example, produced more energy than burning wood, the effects on the environment were extremely harmful. Industrial towns during the late nineteenth century were choked by toxic air pollution produced by coal-burning factories. Water became polluted, also, as the new industries dumped their waste into streams, rivers, and lakes. (For more about the environmental consequences of industrialization, see pages 605 and 610–611.)

**Effects on Business Organization** New ways of organizing businesses arose during the Industrial Revolution. Some manufacturers formed giant corporations in order to minimize risk. A corporation is a business chartered by a government as a legal entity owned by stockholders (individuals who buy partial ownership directly from the company when it is formed or later through a stock market). Stockholders might receive sums of money, known as dividends, from a corporation when it makes a profit. If a corporation experiences a loss or goes bankrupt, the stockholders are not liable for the losses. The most that stockholders can lose is what they paid for the stock in the first place.

Some corporations became so powerful that they could form a monopoly, meaning that they controlled all aspects of a specific business and eliminated all competition. For example, Alfred Krupp of Essen, Germany, ran a gigantic
Responses to the Industrial Revolution

The harsh conditions of urban industrial life provoked resistance. Some workers formed trade unions to advocate for higher pay and safer conditions. Social reformers campaigned for more humane living conditions in cities and working conditions in factories. Some activists went beyond demanding specific improvements; they instead rejected the norms of society produced by capitalism and called for an entirely new social and economic order.

**Growth of Unions** Dangerous and unsanitary working conditions, low wages, and long hours spurred workers to form labor unions (organizations of workers that advocate for the right to bargain over these matters with employers and put the resulting agreements in a contract). For most of the nineteenth century, unions in Great Britain had to organize in secret because the government treated them as enemies of trade. However, by the early twentieth century, unions became more acceptable and membership increased. Unions improved workers’ lives by winning minimum wage laws, limits on the number of hours worked, overtime pay, and the establishment of a five-day work week.

Unions sparked a larger movement for empowerment among the working class. In 1832, 1867, and 1884, the British parliament passed reform bills to expand the number of men who could vote and give more representation to British cities. The acts reduced property ownership qualifications as a requirement for voting. These reforms laid the foundation for expansion of the franchise (right to vote) to all men in 1918. British women would not gain equal voting rights until 1928.

**Social Reform** Along with unions, social activists and reformers hoped to improve the living conditions of the least powerful in society. Reformers’ achievements especially benefited children. A law in 1843 declared that children under the age of 10 were banned from working in the coal mines. In 1881, education became mandatory for British children between the ages of 5 and 10. This focus on education, as opposed to work for monetary gain, permanently redefined the role of children in urban society.

All industrializing nations grappled with the new challenges that factory life introduced. Among these nations, Germany implemented the most comprehensive set of social reforms to protect industrial workers. Under the leadership of Chancellor Otto von Bismarck, Germany started workers’ accident compensation insurance, unemployment insurance, and old age pensions for employees. Bismarck was only somewhat interested in the health and security concerns. He was far more concerned that if his government did not address these problems, socialists and other more radical citizens would demand stronger government action, which would lead to social unrest.
Uniting the World One result of industrialization was to increase interdependence among people around the world. For example, British factories imported minerals from around the world to make into products. They purchased cotton from the United States, Egypt, and India to make textiles that they sold throughout Europe and other parts of the world. Similarly, the responses to industrialization built greater connections among people. Labor leaders advocated formation of international unions so that workers in various countries could unite to demand higher wages. Reforms that began in one country often spread. For example, Bismarck’s social reforms spread throughout Europe, and eventually influenced much of the world.

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<th>Minerals for Trade</th>
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<td><strong>Product</strong></td>
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</tr>
<tr>
<td>Copper</td>
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<td>Gold</td>
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<td>Diamonds</td>
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<td>Guano</td>
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The Intellectual Reaction

The rise of capitalism and industrialization caused people to think about society in new ways. Fresh ideas would shape all later economics and politics.

**Adam Smith** *The Wealth of Nations* by Adam Smith, first published in 1776, is considered a foundational text in support of capitalism and the establishment of private entrepreneurship. In this work, Smith describes his theory of the “invisible hand” of the market; if businesses were allowed to operate in their own interests, society in general would benefit. Though Smith recognized the need for some government regulations, his ideas were a precursor to the *laissez-faire* philosophy popular in the late nineteenth century, which opposed nearly all government regulations that limited business.

**John Stuart Mill** Others found that *laissez-faire* capitalism could be inhumane to workers, and they called for reform. The philosopher John Stuart Mill was a champion of social reforms of the industrial age, including labor unions, child labor laws, and laws ensuring safe working conditions in factories. Mill advocated a philosophy called *utilitarianism*, which sought “the greatest good for the greatest number of people.” Utilitarians did not want to end capitalism; they wanted to address growing problems.
**Utopian Socialism** Unlike Mill, other reformers argued that capitalism was fundamentally flawed. Though it created tremendous wealth, it also created tremendous suffering. These reformers argued for socialism, a system in which major resources and industries would be owned by the workers or the government on behalf of all people. Some bought large tracts of land where they could establish new, ideal communities. Because they hoped to start society anew, they were criticized as utopians. (For more on utopian socialists, see page 409.)

**Karl Marx** The most influential advocate of socialism was Karl Marx, a German scholar and writer. He was fiercely critical of utopian socialists for their desire to escape problems rather than confront them. He called his approach to economics “scientific socialism.” In 1848, Karl Marx and Friedrich Engels published a pamphlet (now known as *The Communist Manifesto*) that summarized their critique of capitalism. According to Marx, capitalism divided society into two basic classes: the proletariat and the bourgeoisie. The proletariat was essentially the working class, working in factories and mines, often for little compensation. The bourgeoisie was the middle class and included the capitalists who owned the machinery and factories where the working class produced goods. Marx argued that in the capitalist system the bourgeoisie exploited the proletariat endlessly for the sake of profit. Because the bourgeoisie owned the *means of production*, such as machines, factories, mines, and land, they received most of the profits. The proletariat, who did the physical and dangerous work, received very little of the wealth they produced. Marx exhorted workers to take control of the means of production and share the wealth they created fairly. The end of capitalism, according to Marx, would usher in an era of equality and justice. Marxist socialism also became known as communism.

Marx’s ideas evolved throughout his life. At times, he strongly advocated democracy, but at other times, he spoke favorably of a “dictatorship of the proletariat.” Not surprisingly, people who called themselves Marxists interpreted his writings quite differently. Some argued for a gradual, peaceful transition from capitalism to socialism. Others believed that only a quick and violent upheaval would work. At one point, Marx became so frustrated with the ideas people associated with him that he declared, “I am not a Marxist.”

**Anarchism** Another response to capitalism was to see government itself as the problem. French politician Pierre-Joseph Proudhon (1809–1865) is the best-known anarchist from the 1800s. In politics, Proudhon argued for abolishing nearly all national government and allowing local communities to rule themselves. In economics, he advocated replacing private ownership of factories and other businesses with cooperative ownership by the workers of the business. His famous declaration that “property is theft” captured anger that many reformers felt toward how the institutions in society, particularly the government, defended property rights more than they did the rights to freedom and equality.
Proudhon believed in peaceful methods of political and economic change, and many other European intellectuals shared his view. However, anarchism did not become widely popular. It became best known for the assassinations of a handful of politicians, including Russian Tsar Alexander II in 1881 and U.S. President William McKinley in 1901.

**Industrial Revolution's Legacy**

It is difficult to overstate the importance of the Industrial Revolution. Mass production made goods cheaper, more abundant, and more easily accessible to a greater number of people than ever before. Growth of factories was a primary factor driving people to move, both from rural areas to cities and from agrarian countries to industrial ones. Both low-skilled workers and high-skilled professionals moved to take advantage of new opportunities provided by industrialization. However, the natural by-products of industrial production polluted air and water supplies. Industry forever changed the nature of work and the lives of workers. Working populations became concentrated in urban centers, as opposed to being spread among rural areas. The workplace shifted from homes to factories, dramatically altering family life. The Industrial Revolution created a new—and many said unequal—working relationship between workers and owners.

Global inequalities also increased because of industrialization. Nations that industrialized early found that they needed more materials to power their production. They looked beyond their borders for raw materials, such as cotton and rubber. By exploiting overseas natural resources, they both destroyed early industrialization in Egypt, China, and India and ushered in a second wave of colonization. (For more on this second wave of colonization, see pages 493.)

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<thead>
<tr>
<th>Country</th>
<th>1800</th>
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<td>Germany</td>
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<td>United States</td>
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The social and economic upheavals caused by the Industrial Revolution prompted scholars in the mid-nineteenth and early twentieth centuries to suggest new perspectives for explaining the structure of modern society. Various thinkers focused on specific features of the new society.

**The Mills** British philosophers John Stuart Mill and Harriet Taylor Mill were an unusual couple in nineteenth-century Europe. Not only were they both philosophers, but they treated each other as intellectual equals and they focused on the role of gender in the evolving world. They accepted the Enlightenment perspective of “man” as a rational being, but they included females as well as males in their definition of man. Harriet was an early advocate of the right of women to vote in her essay *The Enfranchisement of Women* (1851).

John Stuart Mill picked up on his wife’s views in his work titled *The Subjection of Women* (1869). He argued that society would benefit from the inclusion of women in public life: “That the principle which regulates the existing social relations between the two sexes—the legal subordination of one sex to the other—is wrong itself, and now one of the chief hindrances to human improvement; and that it ought to be replaced by a principle of perfect equality, admitting no power or privilege on the one side, nor disability on the other.”

**Karl Marx** As early as 1848, Karl Marx had also argued on behalf of equality for women, but he viewed the oppression of women through the prism of the structure of capitalist society. He focused on class rather than gender in his writing. One of the characteristic traits of industrial society was the emergence of the bourgeoisie, a class that had barely existed in the pre-industrial world. Since the bourgeoisie controlled the means of production, they had leverage over the masses of people (the proletariat) that survived only by their labor. Marx insisted that conflict was inevitable as long as ownership and labor were separate. He believed that communism was the only long-term answer for society.

Marx’s ideas about class conflict and the future were rooted in his reading of history. While most historians of his time emphasized the role of ideas, such as religion and customs, in shaping the economic and political systems of societies, Marx emphasized material causes. That is, the type of technology in a society shapes everything else. For example, a society in which individual cobblers make shoes one pair at a time will look very different from a society in which shoes are mass produced in factories.

**Max Weber** Like Marx, German sociologist Max Weber analyzed the class system of the modern world, but he considered more issues
than economics. Rather than focus on the objective differences in wealth and power among various groups, he emphasized how people viewed their conditions and the actions this led to. He often wrote about how tradition and religion influence how people see the world. Weber is one of the founders of the discipline of sociology.

Weber’s most famous work is *The Protestant Work Ethic and the Spirit of Capitalism* (1905). In it, he suggested that in countries influenced by Reformation leader John Calvin, people worked hard because prosperity was a sign of God’s favor, and this gave them assurance for salvation. In addition, people looked down upon showy displays of wealth, so they saved their money. The combination of hard workers and ample capital for new investments provided ideal conditions for capitalism.

### KEY TERMS BY THEME

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<thead>
<tr>
<th>ENVIRONMENT</th>
<th>STATE-BUILDING</th>
<th>SOCIAL STRUCTURES</th>
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<tbody>
<tr>
<td>spinning jenny</td>
<td>Meiji</td>
<td>tenement</td>
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<tr>
<td>water frame</td>
<td>Otto von Bismarck</td>
<td>slums</td>
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<tr>
<td>James Hargreaves</td>
<td>Industrial Revolution</td>
<td>working class</td>
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<tr>
<td>Richard Arkwright</td>
<td>cottage industry</td>
<td>white-collar</td>
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<tr>
<td>Eli Whitney</td>
<td>putting-out system</td>
<td>captains of industry</td>
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<td>interchangeable</td>
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The combination of hard workers and ample capital for new investments provided ideal conditions for capitalism.
MULTIPLE-CHOICE QUESTIONS

Questions 1.1 to 1.3 refer to the passage below.

"The statesman, who should attempt to direct private people in what manner they ought to employ their capital, would not only load himself with a most unnecessary attention, but assume an authority which could safely be trusted, not only to no single person, but to no council or senate whatever, and which would nowhere be so dangerous as in the hands of a man who had folly and presumption enough to fancy himself fit to exercise it."

Adam Smith, *The Wealth of Nations*, 1776

1.1 Which idea does this passage most clearly express?
   (A) mercantilism
   (B) capitalism
   (C) deism
   (D) consumerism

1.2 A person who agreed with the above passage would most likely also support
   (A) government subsidization of shoe production
   (B) laws regulating membership in skilled trades
   (C) limits on the amount of corn imports
   (D) reducing tariffs on goods entering the country

1.3 Which statement best describes how Karl Marx would respond to this statement about the investment of private capital?
   (A) He would disagree with it by pointing out that groups usually make wiser decisions than do individuals.
   (B) He would disagree with it by pointing out that capital was created by labor, so laborers had a right to decide its use.
   (C) He would agree with it, pointing out that people often did not realize their own follies and presumptions.
   (D) He would agree with it, pointing out that politicians should focus on government and let business owners decide about economics.
Questions 2.1 and 2.2 refer to the image below.

A girl working in a textile factory in the Industrial Revolution

2.1 Which statement provides the best context for interpreting this photo?
(A) Machines used in factories during the Industrial Revolution were similar to the ones used in cottage industries.
(B) One effect of the industrialization was that girls and boys worked side by side rather than in separate jobs.
(C) As industrialization made production more efficient, employees had more control over their lives at work.
(D) The Industrial Revolution transformed gender roles and family life by creating employment outside the home.

2.2 Which reform movement emerged in response to the situation shown in the photo?
(A) measures to promote consumerism
(B) laws requiring students to attend school
(C) creation of anarchist and socialist communities
(D) support of measures to end unemployment
Questions 3.1 to 3.3 refer to the passage below.

"The invalid workman is saved from starvation by the measure we now advocate. . . . Whosoever has looked closely into the state of the poor in large towns, or into the arrangements made for paupers in country communes, and has seen for himself how—even in the best-managed villages—a poor wretch is sometimes treated when weakly and crippled, must admit that any healthy operative, contemplating that spectacle, is fully justified in exclaiming: ‘It is simply horrible that a human being should be treated worse than a dog in his own house!’ I say, therefore, our first object in bringing forward this bill is to ensure kindlier treatment to this class of the poor; and next year I will do my best to give Deputy Richter full satisfaction as to the extent of the provision proposed to be made by the state for the better usage of the unemployed. For the present this measure must be regarded as an experiment—an attempt to find out the depth of the financial water into which we ask the country to plunge."

Otto von Bismarck, speech, 1881

3.1 Which statement provides the best context for understanding the passage?

(A) Germany lagged behind Britain in enacting reforms to improve the lives of industrial workers and the unemployed.

(B) The problems of urban industrial workers and the unemployed were much worse in Germany than in Britain.

(C) The United States led the way in enacting reforms to improve the lives of industrial workers and the unemployed.

(D) Industrialization caused greater economic insecurity in the lives of many urban workers.

3.2 Bismarck made the proposal in the passage because he believed that

(A) the end of capitalism would create an era of equality and justice for industrial workers

(B) if the government did not address worker problems associated with industrialization, socialists and other radicals might incite a revolt

(C) he had to appeal to socialists and other radicals in order to get them to join his government and provide their input

(D) the government needed to step in to reverse the environmental effects created by industrialization and urbanization

3.3 Which reform was instituted by another government in response to the problems of industrialization?

(A) Britain expanded voting by reducing property-owning qualifications.

(B) The U.S. government encouraged the growth of labor unions.

(C) Russia adopted utopian socialism.

(D) The United States allowed a women’s rights movement to emerge.
Question 1 refers to the passage below.

"The advances which gave this great economic change the name Industrial Revolution occurred in Great Britain, yet it would be contrary to the facts to regard the mechanization of industrial processes as strictly an English experience. . . . England was the leading innovator of methods for rendering raw materials more useful to man, but it by no means had a monopoly of inventions. A Frenchman, Antoine Lavoisier, discovered the chemical nature of combustion. . . . An American, Eli Whitney, invented the cotton gin. And a German, Justus von Liebig, determined the chief chemical components of plants and thus laid the basis for a chemical fertilizer industry."


1. Answer parts A and B.

   A. Explain ONE cause of the Industrial Revolution that supports the interpretation by Clough that the change was not a “strictly English experience.”

   B. Explain TWO causes of the Industrial Revolution that focus on the event as a “strictly English experience.”

2. Answer parts A and B.

   A. Explain ONE advantage that allowed the United States to industrialize successfully during the late nineteenth century.

   B. Identify TWO countries that initially faced unfavorable conditions before they began successful industrialization. Explain these unfavorable conditions.
THINK AS A HISTORIAN: APPLY COMPARISON AND CONTRAST

The statements below are generalizations about the process of industrialization. From each pair, choose the sentence that most clearly supports the generalization using comparison or contrast.

1. Inventions greatly improved productivity in the weaving industry in the eighteenth century.
   a. The spinning jenny increased the quantity of a worker’s output by enabling one person to operate multiple spindles, while the water frame increased the speed of production.
   b. The spinning jenny and the water frame were two of these inventions, and they were first used in Great Britain before being adopted in other countries.

2. Steam power made water transportation more efficient in the late eighteenth century.
   a. It spurred countries involved in ocean-going trade to create new coaling stations at crucial points along routes throughout the world, a development that led to global rivalries.
   b. On one hand, vessels going upstream on rivers could travel faster; on the other hand, vessels on the ocean were freed from dependence on winds for power, so they could travel more steadily.

3. Several countries had begun the process of industrialization by the end of the nineteenth century.
   a. Japan, which wanted to catch up to the West out of fear it would be dominated by foreigners, and Russia, which built railroads that promoted trade, followed different paths in this process.
   b. By 1900, Russia had greatly increased its production of steel and iron from a few decades earlier, and this increased output provided a basis for industrialization.
WRITE AS A HISTORIAN: SUMMARIZE INFORMATION

In math, a sum is the total of two or more numbers. It is one number that takes in all that is listed above it. In writing, summarizing is adding up various pieces of information in order to present an accurate view overall. A good summary does not repeat all of the detailed information provided earlier. Rather, it provides a more general statement of the key points and how they fit together. Which THREE of the sentences below emphasize summary?

1. During the early 1700s, most families in Britain lived in rural areas, grew their own food, and made their own clothes.

2. The burning of fossil fuel was essential in the process of separating iron from ore.

3. The Agricultural Revolution increased productivity as a result of crop rotation, the invention of the seed drill, and the introduction of the potato to people’s diets.

4. Cottage industries gave women weavers a certain independence because they could work at home while minding their children.

5. Population growth, access to resources, and development of technology led to Britain’s industrialization.