



HISTORY & GEOGRAPHY

STUDENT BOOK

▶ **10th Grade | Unit 7**

HISTORY & GEOGRAPHY 1007

The Industrial Revolution

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THE INDUSTRIAL REVOLUTION

Introduction

Prior to the mid 1700s, the lifestyle of the United States was basically simple. Although labor was difficult and often seemed endless, it was ultimately satisfying. Man's position of preeminence as the earthly provider and creator of life's necessities gave him a feeling of worth and importance. Food, clothing, tools, and furnishings were all supplied by the toil of man's hand. With the advent of the machine age, man's existence drastically changed. The wonders of industry quickly spread throughout the world, replacing the muscle of man with the power of the machine. Industry expanded to all aspects of life.

In this LIFE PAC® you will examine the Industrial Revolution and its changing effects upon man and upon his world. From Europe's Middle Ages you will discover the steps leading to industry's birth, and you will follow the Industrial Revolution as it set the wheels of industry in motion in England and elsewhere in Europe. You will also watch the age of industry change America into a powerful industrialized nation. You will also study the drastic change the Industrial Revolution brought to the lifestyle of the working man. In addition, you will experience the hardships and the injustices working men faced, and their struggle to share in the wealth they were producing. Finally, you will study the accomplishments of the age of industry, examining the Industrial Revolution's influence on production, distribution, and the world economy.

Man lives in an incredible age, surrounded by powerful machines and by labor-saving devices. Hopefully, after studying this LIFE PAC, you will view the Industrial Revolution as something more than just another meaningless vocabulary term. The Industrial Revolution is a vital, living reality that became the determining factor behind the prosperous economy you know and enjoy today.

Objectives

Read these objectives. The objectives tell you what you will be able to do when you have successfully completed this LIFE PAC. When you have finished this LIFE PAC, you should be able to:

1. List the early European influences that affected the beginning of the Industrial Revolution.
2. Describe the early industrial developments and inventions that advanced industry's growth in Europe and England.
3. List the factors that made the early United States ripe for industry.
4. Explain the influence of wars on industry and the effects of industry on war.
5. Describe the advantages and disadvantages of the growth and influence of corporations on the economy.
6. List the technological developments that greatly increased United States productivity.
7. Explain the social changes that resulted from the Industrial Revolution.
8. Describe the influence of the Industrial Revolution on the world's economy.

1. INDUSTRIAL REVOLUTION IN ENGLAND

Citizens of the twentieth century live in a time of tremendous complexities. To understand this technological age in which you live, you must learn something about the early development of industry. Throughout the world and in every country, the modern age of machinery has made a significant impact upon society.

Just as a roaring, sweeping fire can begin with only a few sparks, so was the Industrial Revolution ignited. Events occurring on the continent of Europe during its darkest hours (the Middle Ages) lit the flame of a machine age that has burned steadily ever since.

Section Objectives

Review these objectives. When you have completed this section, you should be able to:

1. List the early European influences that affected the beginning of the Industrial Revolution.
2. Describe the early industrial developments and inventions that advanced industry's growth in Europe and England:
 - 2.1 List the requirements of an industrial nation.
 - 2.2 Explain the development of the factory system.
 - 2.3 Describe the changes induced by the steam engine and other early inventions that increased productivity.

Vocabulary

Study these words to enhance your learning success in this section.

aristocracy
capitalist
proletariat

capital
free enterprise
sequestered

capitalism
industrialism

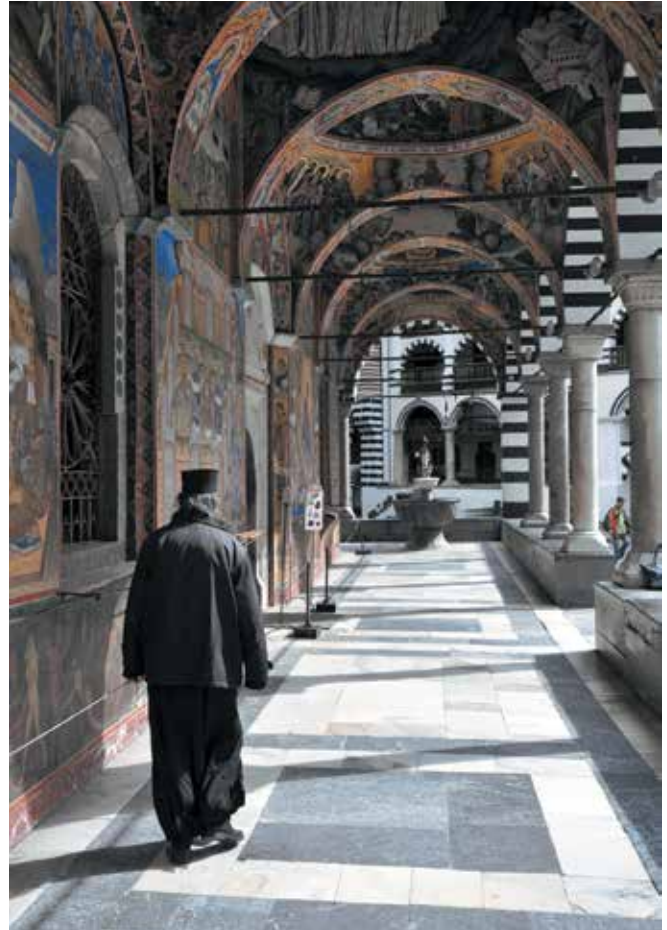
Note: All vocabulary words in this LIFEPAC appear in **boldface** print the first time they are used. If you are not sure of the meaning when you are reading, study the definitions given.

SPARKS OF PREPARATION

The Industrial Revolution brought about a dramatic change in the production of articles people used, bought, and sold. Instead of depending upon manual labor as his ancestors had done for centuries, man could now produce materials more efficiently by machine. Originating in England in the 1750s, the Industrial Revolution was affected by events that occurred much earlier in mainland Europe. It would be helpful to examine some of these events here.

European background. The Middle Ages in Europe was not known as a period of creative ideas or visionary goals. Life remained stagnant for most people who were caught up in a feudal system that kept the rich wealthy and the poor penniless. During this era, monasteries were established where monks worked, prayed, studied, and lived a very **sequestered** lifestyle. As monasteries spread throughout Europe, these Catholic centers inadvertently became models for the factories that developed during the Industrial Revolution. The demands of strict discipline and specific work responsibilities were later duplicated in mines, mills, and factories throughout the industrialized world.

In 1095 Pope Urban II of Rome launched a military movement against the Muslims who occupied Palestine. This military movement was the first of many Crusades to free the Holy Land from the Muslims. Understandably, the Muslims were fierce in their resistance to the Western European invaders, and the Crusaders were unable to hold on to their territorial gains. Something else, however, was captured that in time became even more meaningful. A revival of interest in travel and trade swept over the invading armies. As Italians, Germans, English, French, and other Crusaders passed through the wealthy areas of the Eastern Byzantine Empire, the desire for a better way of life and luxuries increased. Many Italian merchants settled in Constantinople, generating a trade



| Monasteries are early models of organized labor

market between eastern and western European countries.

Europe was enthralled by the commodities and attractions of the Eastern culture, and the business eyes of the economically sleepy westerners were reopened. Economic opportunities were now a possibility for which to work and dream.

Other factors paving the way for **industrialism** included the **capitalism** of bankers and merchants. These bankers and merchants flourished in Europe at the end of the Middle Ages and continued to grow throughout the Renaissance. The profit motive was a driving force in nations that supported a **free enterprise**

system. Businessmen in Europe became increasingly more aware of opportunities for prosperity as their businesses increased. To increase their trade and commerce, they had to produce more goods. This increase in production required more trained workers. Additional labor at a cheap price was in demand in order to increase profits.

Having had their appetites whetted by the Crusades, the Renaissance, and a spirit of self-improvement, Europe became filled with the excitement of eager travelers. Scores of people journeyed from country to country seeking better occupational opportunities.

England soon led the way in industrial production and management. An indication of the type of success England would experience as an industrial country was evident in the abundance of potential factory labor it attracted.

From the countryside of England, farmers who had been driven from their lands sought work in the urban areas. Many Irish families seeking a better way of life in England's cities left their homelands because of extreme poverty and lack of opportunities.

Besides a strong work force, England also possessed other basic requirements for industrial growth that gave the country an advantage in the Industrial Revolution. English merchants and businessmen had sufficient money and materials to risk in investments to make an eventual profit. Coal, iron, and other raw materials essential for industry were abundant. Good transportation was also available to distribute goods to markets at home and abroad. With so many positive conditions, England's machine age was ready to swing into action, and the stage for England's Industrial Revolution was set.



Match the following items.

- | | | | | |
|-----|-------|------------------------|----|---|
| 1.1 | _____ | Industrial Revolution | a. | investing at a risk for financial gain |
| 1.2 | _____ | Middle Ages | b. | change from hand power to machine power |
| 1.3 | _____ | Crusades | c. | businesses competing for profit without undue government intervention |
| 1.4 | _____ | profit motive | d. | system used by monasteries |
| 1.5 | _____ | free-enterprise system | e. | attempts to free the Holy Land from the Muslims |
| | | | f. | European history—from Rome's fall to the Renaissance |

Write the letter for the correct answer on each line.

- 1.6** Patterns monasteries established for helping industry included (1) strict discipline, (2) inventive spirit, (3) specific work responsibilities. _____
 a. 1, 2 b. 2, 3 c. 1, 3 d. 1, 2, and 3
- 1.7** Effects the Crusades had in sparking the industrial age included (1) revived interest in trade, (2) revived interest in business, (3) increased desire to be prosperous and productive, (4) interest in factory development. _____
 a. 1, 2, 4 b. 2, 3, 4 c. 1, 3, 4 d. 1, 2, 3
- 1.8** The basic component a nation does not need to become industrialized is _____
 a. sufficient manpower b. natural resources
 c. capital d. fertile soil

Essential Inventions. By allowing one man to do the same amount of work that once required many men to do, the inventions of numerous machines greatly enhanced the growth of the Industrial Revolution. In the 1440s a German printer named John Gutenberg invented a press that could print material by using movable type. A book that once would have taken months to write by hand could now be printed in days. The Bible was the first book to be printed on Gutenberg's press, making it readily available and affordable by even the common man.

The influence of the printing press was tremendous prior to the growth of the Industrial Revolution. An astute businessman could easily see the potential profit to be made by switching to machinery from manual labor. Once the print was set properly, copies could be quickly run off, thereby eliminating endless hours of painstaking hand copying.

Historians generally agree that, although its roots reached back into the Middle Ages, the Industrial Revolution did not actually begin until after 1750. Inventions created after that date were largely responsible for fanning the sparks in England's flaming revolution. Those inventions soon spread throughout Europe and westerly across the Atlantic Ocean.

The drastic changes brought about by industrialization were first felt in England's growing textile industry. The manufacturing of cotton cloth, for example, was a decided improvement over the tedious work done by a seamstress in shops or within homes.

English businessmen imported the raw cotton that was to be woven into cloth by the spinsters and the weavers who worked in the textile mills. Since demand for cotton cloth was high, more efficient methods were needed in its production. John Kay invented the flying shuttle in 1733, and this invention speeded up the weaving process considerably. An improvement of the weaving loom, the flying shuttle allowed the pull of a cord to move a shuttle back and forth over thread that formerly had to be pushed by hand. As expected, the flying shuttle greatly increased production of cloth.

Following John Kay's invention came the demand for more efficient spinning wheels to make the thread needed for weaving. To meet this demand, James Hargreaves invented the spinning jenny in 1764. This new machine could spin eight times as much thread as the previous single spinning wheels.

Both the flying shuttle and the spinning jenny were improved and eventually were replaced

by better machines. Both of these inventions led to a dramatic change in England's economy.

The selling price of cotton cloth went down as it became cheaper to produce. Consequently, the price reduction increased the demand for the cloth. In turn, an increase in demand for more cloth created a demand for more raw cotton. The invention of a cotton gin helped to meet those demands. Eli Whitney, a colonial school teacher and gunmaker from Connecticut who later relocated in Savannah, Georgia, experimented with a machine that separated cotton seeds from the lint. In 1793 Whitney succeeded in perfecting the cotton gin. This invention meant that instead of one man separating one pound of cotton per day, he could separate *fifty* pounds in the same length of time. Therefore, the cotton gin boosted efficiency and production within the textile industry.

Great technological strides were also being made in England's iron and steel industry. The two raw materials needed by this industry were coal and iron. By the eighteenth century, improvements in the iron industry allowed England to produce a better quality of iron. This improvement resulted largely from the development of a hotter fire by using coke (coal that had been heated to remove certain impurities). The blast furnace was developed after the discovery that blasting air through coke produced

a greater heat. The burning of certain gases in the production of coke was used in making light and heat, thus increasing the fire's intensity. Later, steel was also developed by taking impurities out of the iron and adding certain minerals. Steel, a lighter metal, expanded the variety of products available and increased the efficiency of metal at the same time.

As England's Industrial Revolution progressed, additional industries were developed. For example, one new industry centered around the production of rubber. During the eighteenth century, the people of Europe used rubber for pencil erasers, shoes, and coats. Rubber was brought to Europe from the West Indies by Columbus.

So many inventions and new technological developments in the economy explain why the Industrial Revolution accelerated. The changes brought about by the Industrial Revolution were innumerable. As the demand increased, the supply of these products increased accordingly.

New methods of business organization and operation also developed, increasing production and efficiency. Within a few years, the switch from hand power to machine power had drastically changed life for the people. However, the Industrial Revolution had only begun.



Match the inventors with their inventions.

- 1.9 _____ Gutenberg
 - 1.10 _____ Kay
 - 1.11 _____ Hargreaves
 - 1.12 _____ Whitney
- a. spinning jenny
 - b. printing press
 - c. spinning wheel
 - d. cotton gin
 - e. flying shuttles

Complete the following activities.

1.13 Describe the improvements brought about in the iron industry by the following developments:

- a. coke _____
- b. blast furnace _____
- c. steel _____

1.14 Give three changes brought about by the Industrial Revolution.

- a. _____
- b. _____
- c. _____

1.15 As an eighteenth-century textile company manager, describe the influences and changes brought about by Kay, Hargreaves, and Whitney on your business. Compare your answer with that of a friend. _____

TEACHER CHECK



_____ initials

_____ date

FIRES OF CONTINUATION

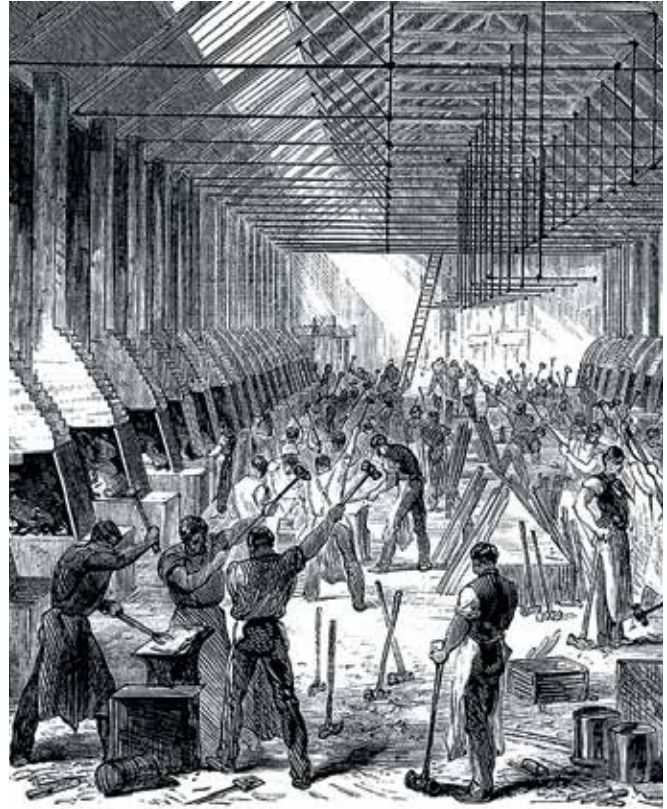
Before the Industrial Revolution, work was conducted mainly at home or in a nearby workshop. Setting his own hours, a man could work at a pace best suited for him, his family, and his customers. The tools he used were his own. The food for his family was grown in the family garden. The preindustrial worker was largely independent and self-sufficient.

The Industrial Revolution greatly altered lifestyles, and the development of the factory system created potential for new energy sources.

Development of the factory system. The shift to manufacturing brought dramatic changes in working conditions. Machines became too large and too expensive to maintain at home; therefore, they were kept in a large building or in a group of buildings. These business centers, or factories, were initially located where water power was available to run the machines. These new factories exerted pressure on the working man. The worker often had to either travel great distances to work or relocate near the factory.

The setting up of a factory involved a great deal of money. Although certain individuals were able to accumulate enough money to become factory owners, they were the exception rather than the norm. Therefore, several businesses often combined to gather sufficient **capital**. In such cases people individually bought shares of stock, enabling them to become part owners of the new establishment. Depending upon the number of shares owned, each stockholder would then receive a percentage of the business's profits.

The number of **capitalists** who were willing to invest large amounts of money continued to increase in England. The financial backing of industry demanded tremendous amounts of capital to operate huge factories. Financial support came from merchants who had become wealthy through trading during previous years.



| Early factory workers

Most of these merchants were middle-class citizens. The upper class, which consisted of the nobility and the **aristocracy**, made their fortunes by owning land. The idea of involving themselves in such mundane things as machines and factories was unthinkable! When the middle class gained enough wealth and power in business to strongly influence the country, however, the upper class quickly changed their way of thinking.

Factories, by their very nature, categorized people into two groups—those directing the work and those performing the assigned tasks. Although both groups were employed by the same company, they held positions of varying responsibilities.

The group that directed or administered the work was paid a monthly or yearly salary. The workers, or **proletariat**, carried out the orders

in exchange for their daily or weekly earnings (wages). These workers bore the burden of the factory system whereas the owners and, to a lesser extent, the administrators reaped the benefits. Many workers owned little other than the clothes on their backs, and they worked under conditions that bordered on slavery. Beggars, street people, women, and children were among the original factory workers. These people were soon joined by skilled workers. Many farmers and artisans were drawn helplessly into the factory system as their occupations faltered. Spinners, weavers, shoemakers, and tailors, among others, entered a new vocation where their treasured skills were deemed worthless. Although some skilled workers managed to remain independent, many workers fell slave to the factory system.

In spite of the many negative aspects, factories did offer various positive advantages. For example, they provided needed jobs for many of the unemployed and gradually improved

economic conditions within the nation. Industries, through good performance, contributed their share in balancing employment, trade, and commerce both nationally and internationally.

Unfortunately, in the eyes of the capitalists, the poor conditions created by the factory system were of little interest. The factory system did not concern itself with the needs of individuals but demanded performance even at a personal price. In thinking only of monetary gain, industry exacted a heavy toll from its workers and their families. The primary importance of a God-created individual (Genesis 1:27) was largely ignored. Consequently, self-esteem and dignity were crushed. Placed on an assembly line, men found their creativity, dignity, and sense of worth stifled by machine-like motions. The well-being of the common man was sacrificed to allow for increases in production, distribution, and efficiency.



Write the letter or letters for the correct answer on each line.

- 1.16** Before the Industrial Revolution, craftsmen _____ .
- | | |
|------------------------|-----------------------------------|
| a. set their own hours | b. traded their products for food |
| c. owned their trade | d. ran their business at home |
- 1.17** Stockholders in large businesses _____ .
- | | |
|-----------------------------|------------------------------------|
| a. became part owners | b. received a share of the profits |
| c. decided company policies | d. lost when the company lost |
- 1.18** Positions in factories included _____ .
- | | |
|--------------------------|-----------|
| a. assembly-line workers | b. owners |
| c. administrators | d. stocks |
- 1.19** The following groups of people became factory workers: _____ .
- | | |
|---------------------|-----------------------|
| a. farmers | b. women and children |
| c. skilled artisans | d. owners |
- 1.20** Positive advantages of the machine age were _____ .
- | | |
|------------------------------|---------------------------------|
| a. that it supplied jobs | b. that it improved the economy |
| c. better working conditions | d. that it increased production |

- 1.21** The factory worker bore the brunt of the factory system through the stifling of his _____ .
- a. self-worth
 - b. creativity
 - c. assembly-line job
 - d. dignity

Answer the following questions.

- 1.22** Why did businesses switch from homes to factories? _____

- 1.23** How could a businessman without sufficient capital to start his own factory still become part of a large company? _____

- 1.24** Imagine you are a shoemaker-turned-factory worker. To what degree has your self-image and lifestyle changed? Explain. _____

SELF TEST 1

Match these items (each answer, 2 points).

- | | | |
|-------|-----------------------------|--------------------------------------|
| 1.01 | _____ Gutenberg | a. flying shuttle |
| 1.02 | _____ Watt | b. steam engine |
| 1.03 | _____ McAdam | c. wars to capture the Holy Land |
| 1.04 | _____ Kay | d. printing press |
| 1.05 | _____ Hargreaves | e. cotton gin |
| 1.06 | _____ Fulton | f. spinning jenny |
| 1.07 | _____ Stephenson | g. <i>Clermont</i> |
| 1.08 | _____ Crusades | h. change from hand to machine |
| 1.09 | _____ Whitney | i. <i>Torch</i> |
| 1.010 | _____ Industrial Revolution | j. improved road building |
| | | k. wars of the Industrial Revolution |
| | | l. <i>Rocket</i> |

Complete the following sentences (each answer, 3 points).

- 1.011 Europe's dark years under the feudal system are called the _____.
- 1.012 Monasteries set an example for factories in a. _____ and b. _____.
- 1.013 The Crusades revived Europe's interest in a. _____ and b. _____.
- 1.014 Industrialized methods and inventions were used first in England in the _____ industry.
- 1.015 Two raw materials needed by industry were a. _____ and b. _____.
- 1.016 The two groups of factory employees were a. _____ and b. _____.
- 1.017 People who individually bought into a corporation were called _____.
- 1.018 The disadvantages of factory life were endured largely by the _____.
- 1.019 Inventions that developed from the use of the steam engine in transportation were the a. _____ and b. _____.
- 1.020 Factories were first powered by a. _____ then changed to b. _____.

Write true or false (each answer, 1 point).

- 1.021** _____ The Crusades were led by Catholic Turks to free Palestine.
- 1.022** _____ The production of goods by trained workers was necessary for trade to increase.
- 1.023** _____ The Bible was the first book to be printed on Hargreaves' press.
- 1.024** _____ The Industrial Revolution really began in England after 1750.
- 1.025** _____ Kay's and Hargreaves' inventions increased textile production.
- 1.026** _____ Before the Industrial Revolution, craftsmen commonly worked at home.
- 1.027** _____ Factory workers were unskilled laborers.
- 1.028** _____ The Clermont and the Rocket were driven by wind power.
- 1.029** _____ The steamship ended delays in water travel.
- 1.030** _____ Steam locomotives provided a faster and safer means of transporting goods.

Write the letter of the correct answer on each line (each answer, 2 points).

- 1.031** The basic requirements needed by a nation for industrial growth are (1) work force, (2) corporations, (3) natural resources, (4) sufficient capital. _____
 a. 1, 2, 3 b. 2, 3, 4 c. 1, 2, 4 d. 1, 3, 4
- 1.032** Early factors influencing the Industrial Revolution included (1) feudal system, (2) Crusades, (3) monasteries, (4) capitalism of bankers. _____
 a. 1, 2, 3 b. 2, 3, 4 c. 1, 2, 4 d. 1, 3, 4
- 1.033** Changes brought about by the Industrial Revolution included (1) increased production, (2) slower distribution, (3) cheaper goods, (4) better products. _____
 a. 1, 2, 3 b. 2, 3, 4 c. 1, 3, 4 d. 1, 2, 4
- 1.034** The age of the machine (1) decreased unemployment, (2) improved the economy, (3) concerned itself with individuals, (4) stifled the common man. _____
 a. 1, 2, 3 b. 2, 3, 4 c. 1, 2, 4 d. 1, 3, 4
- 1.035** Practical uses of the steam engine included (1) improving roads, (2) running factories (3) steamships, (4) steam locomotives. _____
 a. 2, 3, 4 b. 1, 2, 3 c. 1, 3, 4 d. 1, 2, 4

Answer the following questions (each answer, 4 points).

1.036 What industrial advantages enabled England to lead the way in Europe's Industrial Revolution? _____

1.037 What improvements did the Industrial Revolution bring to the textile and the iron industries?

a. _____

b. _____

1.038 How were factories established? _____

1.039 What advantages did the steam engine bring to industry? _____

86
108

SCORE _____

TEACHER _____

initials

date



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