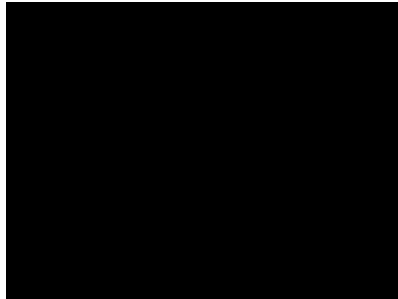


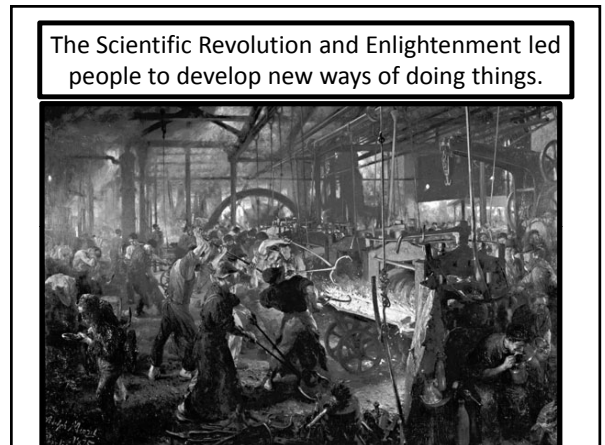
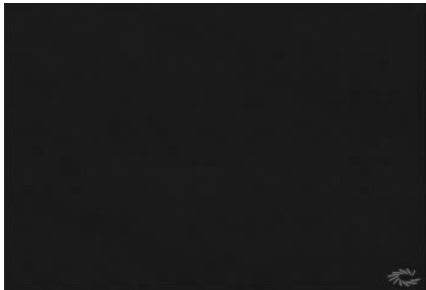
The Industrial Revolution

1700–1900

What do you think were the positive and negative effects of industrialization?



Life Before the Industrial Revolution




- ### The Essential question:
- **Essential Question(s):**
 - How did England become an industrial world leader? What are the cause and effects of the Industrial Revolution?
 - **Secondary essential question:**
 - How did the impact of the growth of population promote industrialization in England?
 - How did scientific and technological changes promote **industrialization** in the **textile** industry in England?

7.1 A New Kind of Revolution

World, Chapter 7, Section 1

FROM MUSCLE TO MACHINES



For centuries, workers had used muscle power to farm the land.

- Main Idea:
- In the 1700s, conditions in Great Britain led to the rapid growth of the textile industry, which in turn led to huge changes in many other industries.

Industrial Revolution Brings Change




Living During the Industrial Revolution

A. REVOLUTION IN GREAT BRITAIN

Industrial Revolution

Vocabulary

- Era when the use of power-driven machinery was developed.
- For several reasons, it started in Great Britain.

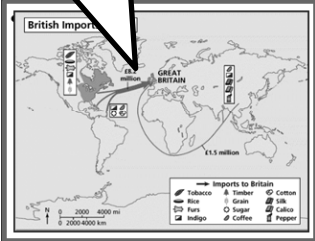


Great Britain Factors for Success: included a range of political and economic events.

- Exploration and colonialism
- Sea power
- Political stability
- Government support
- Growth of private investment

(1) Essential Question:
How did England become an industrial world leader? p 236

2. Essential Question:
What impact did exploration and colonialism have on Great Britain's birthing of the Industrial Revolution? p 236




- **British Imports, 1770s**
This map shows the major goods imported to Britain from the Americas and Asia in the 1770s. Note that by this time, the trade with Britain's colonies in North America and the Caribbean was far larger than that with Asia, showing just how great an economic stake Britain had in the American colonies at the time.

Great Britain Factors for Success: included a range of political and economic events.

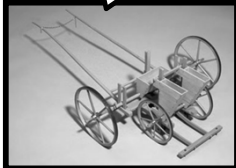
Agricultural Factors

For centuries, workers had used muscle power to farm the land.



People to Know: Jethro Tull

wealthy farmer. 1701 invented the seed drill, a machine that made planting grain much more efficient.



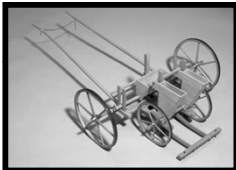
Vocabulary: enclosure movement

- Wealthy landowners could buy up fields previously been shared by rich and poor farmers alike.
- New landowners combined the small fields to create large farms /fenced them
- Allowed efficient farming methods
- Increased the food supply


- Threw countless farmers off the land.
- Unable to make a living in the countryside,
- These poor farmers went to the cities for jobs.
- There they would form the workforce for growing industries.

(3) Identify Cause and Effect What effect did changes in agriculture have on the Industrial Revolution? P 236

- seed drill, improvements in breeding
- increased food supply, population grew;
- evicted farmers joined industrial workforce



• **Analyze** What do you think is the connection between canals and rivers and industry? p 234 map



Canals and rivers were used to bring natural resources to industrial sites; they were also used to transport goods

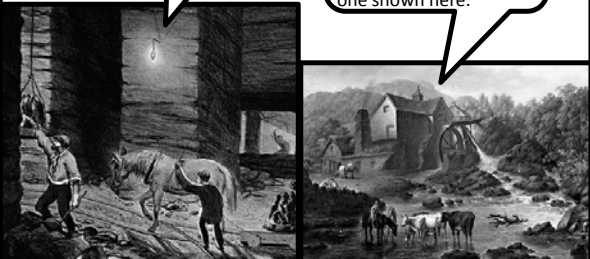
Canals and Industrial Revolution




WGBH

Coal had been a useful fuel for centuries. In the 1700s, mines starting producing large amounts of coal.

Throughout Great Britain, rushing streams could be used to power waterwheels like the one shown here.





RESOURCES OF GREAT BRITAIN, 1800

In 1800, much of Europe's economy was still based on farming. Times were changing, though, particularly in Great Britain. There, fewer people were working on farms, and more were working in manufacturing. Great Britain's natural resources, such as coal and iron, were major factors in the growth of British industry.

Britain's Big Advantage


Vocabulary

Factors of Production

- Land (*all of a place's natural resources*)
- Labor
- Capital

• **FACTORS OF PRODUCTION:** essential elements that a nation needs to achieve economic success p 237

Predict Based on the map, where do you think Great Britain's first industries grew? p 234



in the south central region, some coastal areas


Factors of Production

- Land (*all of a place's natural resources*)
- Great Britain had all the resources it needed for industry.

Britain's Big Advantage

(4) Describe What were the factors of production that helped produce an Industrial Revolution in Great Britain? p 237

FACTOR OF PRODUCTION	LAND	LABOR	CAPITAL
What it means	All natural resources	People available to work	Funds for investment
How it was an advantage	Had coal for fuel, iron for steel	Growing population, people who had lost farmland	Country prosperous, money to spend, people with abilities



Factors of Production

- Land (*all of a place's natural resources*)
- Great Britain had all the resources it needed for industry.

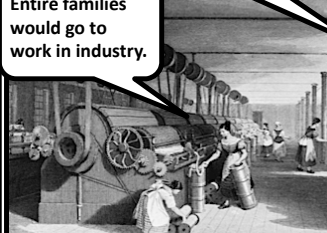
Britain's Big Advantage

Great Britain: Canals and Navigable Rivers

Factors of Production

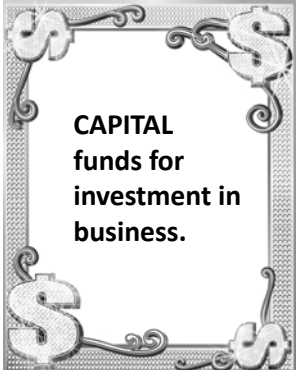
(5) Essential Question: How did the impact of the growth of population contribute to industrialization? p 237

Entire families would go to work in industry.



- **LABOR**
- Britain had the growing population made possible by a greater food supply.
- Thousands of people their farmland because of the enclosure movement.
- They went to work in industry

Britain's Big Advantage



CAPITAL
funds for
investment in
business.

Factors of Production

- The country was generally prosperous, and people had money to spend.
- Britain also had “**human capital**”—people with **abilities and skills** that are needed in industry. For example, Jethro Tull and later inventors.
- With all these factors of production in place, Great Britain was ready for a boom in business.

Britain’s Big Advantage

(6) Reading Check--Find the Main Idea Why was Great Britain in the 1700s ideally suited to be the birthplace of the Industrial Revolution?


- *enclosure movement led to large **labor** supply,*
- *private investors provided funds for investment, (**capital**)*
- *coal and iron deposits provided needed **natural resources**.*

- *Colonies around the world supplied raw materials,*
- *powerful navy and merchant fleet facilitated trade,*
- *waterways provided power and transportation,*

B. REVOLUTION IN TEXTILES

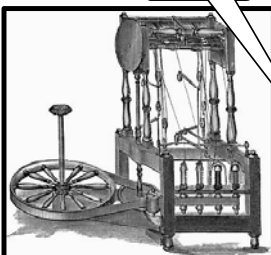
B. Revolution in Textiles: cottage industry p 237

- **New Machines for an Old Industry** Vocabulary
- **cottage industry:** Weaving was a **cottage industry**— a craft occupation performed in the home.



B. Revolution in Textiles: industrialization

Vocabulary

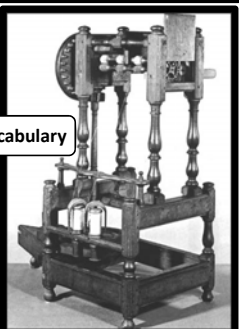


- **A New Way of Making Cloth**
- **New Machines for an Old Industry**
- But the old ways of making cloth were completely transformed by **industrialization**, or the process of changing to power-driven machinery.

B. Revolution in Textiles: (7) How did Richard Arkwright solve the problem of the spinning jenny? P 238

- Hargreaves’ spinning jenny, which spun several threads at once was not perfect. Thread still thick and prone to break when woven into cloth.
- **Richard Arkwright**, solved this problem with the spinning frame, which spun stronger, thinner thread.

Vocabulary



B. Revolution in Textiles: (8) Why were factories created p 238



- **Cloth-Making in Factories**
- **New machines were too big for the weaver's cottage.**
- **Had to be housed in large buildings constructed specially for that purpose.**

A building that housed industrial machines became known as a **factory**, from the old word *manufactory*. Factories needed ready supplies of power.

Vocabulary

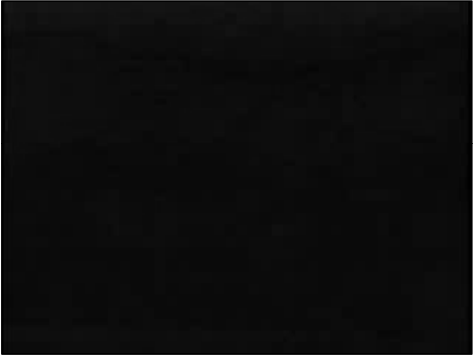
- In 1770 England produced about 50,000 bolts of cloth.
- By 1800 the textile output had increased to 400,000 bolts.

(9) Reading Check: Identify Problem and Solution How did machines solve problems that weavers faced? pp 237-238

- *spinning jenny and spinning frame spun thread into yarn,*
- *“flying shuttle” and power loom made weaving faster*

Textile Manufacturing




Textile Manufacturing



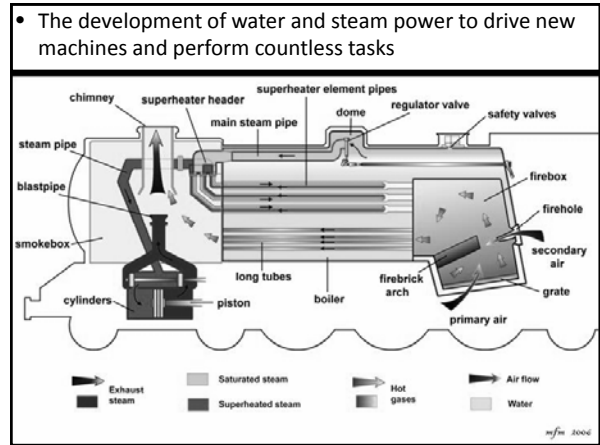
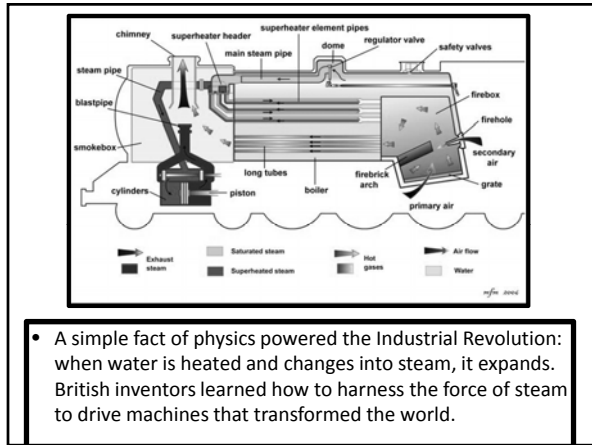
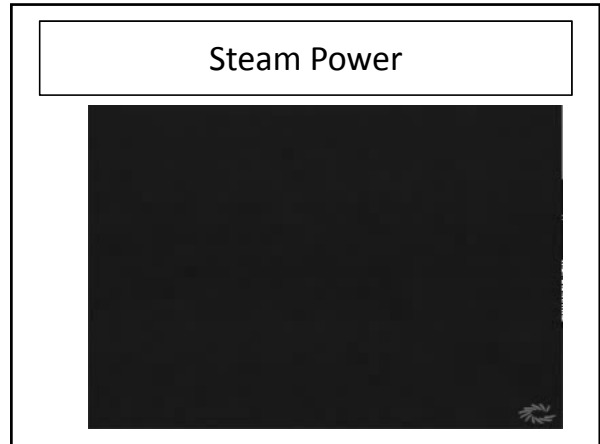
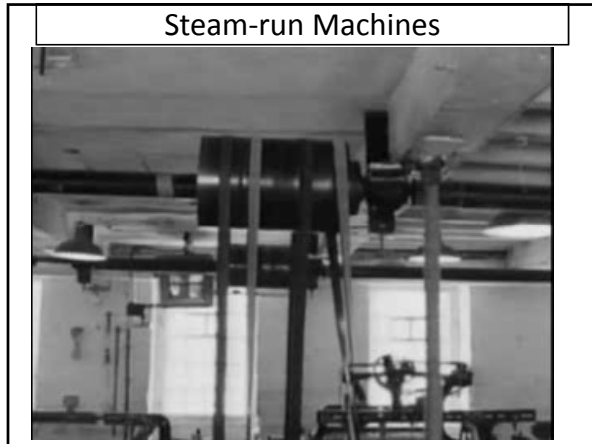
C. STEAM POWERS THE REVOLUTION

10. Recall What industry stimulated the widespread use of steam engines?

textile industry



- A Watt steam engine, the steam engine fuelled primarily by coal that propelled the Industrial Revolution in Great Britain and the world



Development of the Steam Engine:

Vocabulary

• 11. What was James Watt's main achievement? p 239

James Watt

- developed crucial innovations to make the steam engine efficient, fast, and better able to power machinery.
- The widespread use of steam engines began when inventors put them to use in the textile mills.
- Steam was soon applied to other uses, eventually producing a revolution in transportation.

Development of the Steam Engine


• 12. Why did steam-powered trains soon become essential to the Industrial Revolution? P 239

- They made possible the fast shipment of finished goods even to faraway markets.

Development of the Steam Engine


- **Robert Fulton**
 - American engineer and inventor; he built the first commercially successful, full-sized steamboat, the *Clermont*, which led to the development of commercial steamboat ferry services for goods and people.

Vocabulary



Coal for British Steam Engines


- 13. Why was coal an important natural resource? Why did the coal industry grow? P 239
- More and more factories were built to run on steam. Coal was needed to make iron used to make the machines; consequently, the coal mining industry in northern and western England grew. By 1800, Great Britain produced 80 percent of Europe's coal.



Coal and Iron

14. Reading Check--Make Generalizations

What impact did the steam engine have on the growth of British industry? P 239




- *major impact;*
- *used in textile mills,*
- *factories could be located away from rivers,*
- *powered locomotives*
- *and ships,*
- *led to development of coal as a resource,*
- *more factories built near northern coal mines*

D. INDUSTRIALIZATION SPREADS

Steamships and the Spread of Industrialization

- *Great Eastern* under construction in the 1850s--built to carry passengers and cargo from Europe to Australia.



- 15. Why were the construction of large, faster steam ships an important factor in industrialization? P 240
- carried raw materials to industrialized countries,
- finished products to markets,
- immigrants to countries where they could get factory jobs.

Industrialization Spreads

- 16. What was it about Western countries that encouraged them to embrace industry? P 240**
- Individual freedom became a significant force
- Society saw competition as good
- Wealth and fame rewarded
- Explorers raced to find new lands where merchants could do business
- Fierce competition led some to exploit other countries in their search for raw materials and markets
- Industrialists competed to improve on inventions and processes

Industry Comes to America

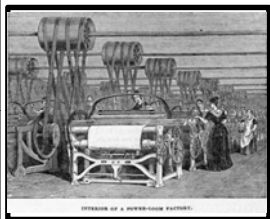
- 17. How did Slater bring the plans of the Arkwright to the U.S.? What is the result or effect of his bringing the plans to the United States? Pp 240-241**
- Vocabulary**
- Samuel Slater, a highly skilled young millworker, disguised himself as a farm worker and boarded a ship to America in 1789.
- Had detailed knowledge of the machinery created by water frame inventor Richard Arkwright
- Did not have a copy of the English machines to use as a model.
- In a remarkable feat of memory, Slater built the complex Arkwright machinery from scratch at a Rhode Island mill.
- Slater became known as the Father of American Industry.
- Textile mill technology spread rapidly throughout the northeast United States.

18. How did industry spreads to Europe?

- Cockerill in 1807 founded a textile factory in Belgium
- In 1789 revolution erupted in France. Political unrest delayed the industrialization of France.
- By 1848 France had become an industrial power.
- Germany had no central government to support industry.
- Railroads were being built, however
- Railroads paved the way for industrialization after about 1850.

19. Reading Check--Compare and Contrast How did industrialization in Britain compare to the process in America and Europe? pp240-241

- Britain industrialized first, America and Europe benefited from earlier inventions;*
- Lowell factory in Massachusetts was first all-in-one mill;*
- political issues delayed industrial development in continental Europe*



20. How did industry evolve in Asia? P 241

- Eventually, Industrialization took hold in Japan after 1868, when the Meiji government came to power and modernized Japan's economy. Within just a few decades, Japan had thriving industries
- Japan was far ahead of its Asian neighbors.
- The industrialization of other major world powers—including China, India, and Russia— would not occur until the 1900s.

Factors in the Start of the Industrial Revolution

Factors in the Start of the Industrial Revolution				
Government	Agriculture	Land	Labor	Capital

- Government—laws favored businesses;
- Agriculture—experimental farming methods;
- enclosure movement; Land—Britain had coal, iron, and water; Labor—growing population
- supplied a large workforce; Capital—Britain prospered, had skilled workers and inventors

- **Persuasion** Imagine that you are a highly skilled millworker living in Great Britain in about 1800. Write an outline for the main points you would make to government officials to persuade them that you should be allowed to go to the United States to start a textile business.