The Industrial Revolution
What was the industrial revolution?
The industrial revolution was a time when power-driven machinery and factories became widespread.
Where did the industrial revolution begin?
The industrial revolution began in England.
Why did the industrial revolution begin in England?
England had all of the **factors of production**: Land, Labor, and Capital

And they had political stability
• Land- resources such as coal, iron ore, rivers, agricultural revolution
Labor
Rivers & Good Harbors
Labor - large population of workers

Agricultural Revolution

population
Capital - money for investment in businesses and to support growth of factories (expanding economy)
How did agriculture change in England prior to the industrial revolution?
Wealthy landowners began buying up small farms. This was the **enclosure movement**. 

Wealthy landowners experimented with new farming techniques and machinery which resulted in more food being produced by fewer farmers. *(Agricultural Revolution)*

This also meant that unemployed farmers and farm workers needed new jobs.
What were some inventions that improved agriculture?
Seed drill
Crop rotation
Selective breeding
How were textiles produced before the industrial revolution?
Textiles were produced in peoples homes which was called the cottage system or the putting out system.

Prior to the Industrial Revolution, and even during its early years, entrepreneurs provided poor families with raw materials for spinning, weaving, and garment making in their own homes. Early 19th-century print of English family sewing uniforms for the British army under the domestic, or putting-out, system that preceded the factory system.
Who invented the Spinning Jenny?
What other inventions changed the textile industry?
Flying shuttle
Water frame
Spinning mule
Power loom
Flying Shuttle

- John Kay's invention allowed the shuttle, containing the thread, to be shot backwards and forwards across a much wider bed. The flying shuttle also allowed the thread to be woven at a faster rate, thus enabling the process of weaving to become faster.
In 1779, Samuel Crompton invented the spinning mule that combined the moving carriage of the spinning jenny with the rollers of the water frame.
Richard Arkwright patented the spinning frame or water frame that could produce stronger threads for yarns. The first models were powered by waterwheels so the device came to be first known as the water frame.
The power loom was a steam-powered, mechanically operated version of a regular loom, an invention that combined threads to make cloth.
What were some advances in transportation during the industrial era?
Steam Engine
Canals
McAdam roads
Turnpikes
Railroads
Fig. 55.—The "Rocket," 1829.
**Trésaguet**
- Gravel or broken stone (1-inch layer)
- Broken stone (2-inch layer)
- Foundation layer (8 inches)

**Telford**
- Gravel or broken stone (1-inch layer)
- Broken stone (7-inch layer)
- Foundation layer (7 inches)

**McAdam**
- Gravel or broken stone (1-inch layer)
- Broken stone (8-inch layer)

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Gate where the tolls were collected

Bridges built

Better harder road surface

Roads levelled

Roads straightened

Professional Surveyors & road repairs
How did railroads change life in Britain?
Led to more economic growth, because it provided cheap transportation for goods

Created jobs - Railroad workers and coal miners

Increased England's agricultural and fishing industry because railroads allowed the markets for these goods to increase

Made travel easier - increase in commuters and more vacation options
How did work change for the average family during the industrial revolution?
• Harsh working conditions in factories (poor lighting, poor ventilation, dangerous machinery)
• 14 hour days, 6 days a week
• Monotonous work
• No job security
• Men competed with women and children for jobs
• Low wages
What were living conditions like in the cities during the early industrial era?
• Poor living conditions
• Low life expectancy
• Overcrowding
• Poor sanitation
• Frequent cholera epidemics (1849 – 400 Londoners a day died)
• Polluted drinking water from the Thames River
• Low life expectancy (1842-38 years in rural areas, 17 years in cities, 7 years in coal mines)
How did the industrial revolution affect slavery?
The invention of the cotton gin increased the demand for slaves.
How did the Industrial Revolution produce changes in culture and society?
Changes in **Upper Class** - Some factory owners, merchants, and investment bankers grew wealthier than landowners and aristocrats

**New Class** – **Middle class** (skilled workers, professionals, business people, wealthy farmers)

Middle Class evolved further

**Upper Middle Class**- government employees, (doctors, lawyers, managers)

**Lower Middle Class**- had a comfortable standard of living (factory overseers, skilled workers)

**Poor Workers**- saw little improvement in living and working conditions from 1800-1850
What were some of the social reforms that took place during the industrial era?
Campaigns to end child labor

Efforts to increase and improve education

Efforts to give workers more rights through labor unions and collective bargaining

Increase demand for women's rights

Prison reform

Abolition of slavery
What were some technological advances that occurred during the industrial revolution and who invented them?
steam engine - James Watt

cotton gin - Eli Whitney

Bessemer Process (new process for making steel) - Henry Bessemer
What were some advances in medicine that occurred during the industrial revolution?
Some advances in medicine that occurred during the industrial revolution were a vaccine for small pox and the discovery of bacteria.
Who was Edward Jenner?
Edward Jenner developed a vaccine for smallpox.
Who was Louis Pasteur?
Louis Pasteur was a French chemist and microbiologist who was one of the most important founders of medical microbiology. He is remembered for his remarkable breakthroughs in the causes and preventions of diseases. His discoveries reduced mortality from puerperal fever, and he created the first vaccines for rabies and anthrax. His experiments supported the germ theory of disease. He was best known to the general public for inventing a method to treat milk and wine in order to prevent it from causing sickness, a process that came to be called pasteurization.
What economic theories supported the industrial revolution?
Capitalism and market competition fueled the Industrial Revolution.

- Capitalism
- Laissez faire
- Free market
- Free trade
- Adam Smith “Wealth of Nations”

By Adam Smith, LL.D., and F.R.S.,
Formerly Professor of Moral Philosophy at the University of Glasgow.

IN TWO VOLUMES.

VOl. I.

London:
Printed for W. Strahan and T. Cadell, in the Strand.
MDCCLXVI.
What were some theories opposed to capitalism?
Socialism- economic system in which the factors of production are owned by the gov’t and operate for the welfare of all
Marxism - political and economic theories based on the ideas of Karl Marx and Friedrich Engels
radical type of socialism; inspired revolutions in Russia, China, Vietnam, and Cuba
Communism—complete socialism, all land, mines, factories, railroads, and businesses would be owned by the people, and all goods and services would be shared equally.

Marx believed communism would be the final stage in human society.
Karl Marx and Friedrich Engels wrote “The Communist Manifesto”

Warring Classes: bourgeoisie and proletariat

Haves and have-nots
How did the industrial revolution lead to an increase in imperialism?

Imperialism is the policy of extending one country’s rule over another.
In order for industrialization to continue, industrialized nations needed **resources** to supply to their factories. And they needed more **markets** to sell the goods produced in these factories.
THE MAD SCRAMBLE FOR AFRICA
What were some of the effects of imperialism?
Imperialism gave more power and wealth to already wealthy and industrialized nations and increased poverty in less developed nations.

Imperialism widened the gap between developed and undeveloped countries. (global inequality)
What were the social, economic, and political effects of the industrial revolution?

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<th>Economic</th>
<th>Political</th>
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<td><strong>Long-term</strong></td>
<td><strong>Political</strong></td>
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<tr>
<td>• Long hours worked in factories</td>
<td>• New inventions</td>
<td>• Child labor laws to end abuses</td>
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<td>• Urbanization (increase in population in cities)</td>
<td>• Factories</td>
<td>• Reformers urged equal distribution of wealth</td>
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<td>• Rise of suburbs</td>
<td>• Increased production</td>
<td>• Rise of trade unions with a lot of political power</td>
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<tr>
<td>• Poor city planning</td>
<td>• Higher demand for raw materials</td>
<td>• Reform bills passed in governments</td>
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<td>• Poor living conditions</td>
<td>• Growth of world wide trade</td>
<td>• Rise of ideas opposed to capitalism (socialism, Marxism, and communism)</td>
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<tr>
<td>• Loss of family stability</td>
<td>• Population explosion led to a large labor force</td>
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<tr>
<td>• Expansion of middle class</td>
<td>• Exploitation of mineral resources</td>
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<td>• Improved standard of living for middle class</td>
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