Essential Question: How did the Industrial Revolution impact society?

- The Industrial Revolution Begins in Britain
- Inventions Spur Industrialization
- Improvements in Transportation
- The Railway Age Begins

THE INDUSTRIAL REVOLUTION BEGINS

- Beginning in the early 1700's, wealthy landowners in England dramatically improved farming methods in what amounted to an Agricultural Revolution which eventually paved the way for the Industrial Revolution.
- After wealthy landowners bought up the land of village farmers, they enclosed their land with fences or hedges.
- These larger fields called enclosures allowed them to experiment with new agricultural methods designed to boast crop yields and forced small farmers to become tenant farmers or give up farming and move to the cities.

THE INDUSTRIAL REVOLUTION BEGINS

- Jethro Tull invented the seed drill in 1701 which allowed farmers to sow seeds in well spaced rows at a specific depth.
- The process of crop rotation proved to be one of the best development of scientific farmers, where farmers would plant different crops to restore different nutrients.
- Livestock breeders improved their methods by allowing only the best livestock to breed.
- As food supplies increased and living conditions improved, England's population mushroomed, which caused more people to move to the city to become factory workers.

THE INDUSTRIAL REVOLUTION BEGINS

- While in the United States, Europe and Latin America political revolutions brought in new governments, a different type of revolution now transformed the way people did work.
- The Industrial Revolution refers to the greatly increased output of machine-made goods that began in Britain during the 18th century and soon spread to Continental Europe and North America.
- **England became the 1st country to industrialize because of this large population, capital (wealth) and it possessed extensive natural resources.**

THE INDUSTRIAL REVOLUTION BEGINS

- The process of developing machine production of goods, industrialization, required such resources as water power and coal to fuel the new machines, iron ore to construct machines, tools, and buildings, rivers for inland transportation, and harbors from which its merchant ship set sail.
- In addition to its natural resources and large population, Britain had an expanding economy where business people were willing to invest in the manufacture of new inventions
- Finally Britain's political stability gave the country a tremendous advantage over its neighbors
  - Factors of production (land, labor and capital)

INVENTIONS SPUR TECHNOLOGICAL ADVANCES

- Inventions now revolutionized the industry, with Britain's textile industry leading the way by speeding up the process by which spinners and weavers made cloth.
- In 1733 a machinist named John Key invented the Flying Shuttle that sped back and forth on wheels and doubled the work a weaver could do in a day.
- In 1764 a textile worker named James Hargreaves invented a spinning wheel he named after his daughter the Spinning Jenny which allowed one spinner to work eight threads at a time.
- Richard Arkwright invented the Water Frame in 1769 which drove the spinning wheels from rapid streams.

INVENTIONS SPUR TECHNOLOGICAL ADVANCES

- Finally in 1779 Samuel Crompton combined the features of the spinning jenny and water frame to produce the Spinning Mule, and Edmund Cartwright's Power Loom sped up weaving after its invention in 1787.
- Wealthy textile merchants set up these machines in large buildings called factories, which were built near sources of waterpower such as rivers and streams.
- England's cotton came from plantations in the American South and in 1793 an American inventor named Eli Whitney invented a machine called the Cotton Gin which removed seeds from raw cotton and multiplied the amount off cotton that could be cleaned.

IMPROVEMENTS IN TRANSPORTATION

- Progress in the textile industry spurred other industrial improvements, the 1st of which was the Steam Engine.
- James Watt, a Scottish mathematical instrument maker figured out a way to make the steam engine work faster and more efficiently while burning less fuel.
- Steam could also be used to propel boats and an American inventor named Robert Fulton ordered a steam engine from Watt and Boulton to power his steamboat the Clermont up and down the Hudson River in New York.
- Watt joined with a businessman Matthew Boulton who organized, managed, and took the risks of the business (entrepreneur) while paying Watt a salary and encouraging him to build better engines.
- Roads in Britain also improved thanks to John McAdam, a Scottish engineer who equipped roadbeds with a layer of large stones for drainage and a smooth layer of crushed rock on top. Called "Macadam" roads.

THE RAILWAY AGE BEGINS

- A steam engine on wheels, railroad locomotive, drove English industry after 1820.
  - 1st railroads spurred industrial growth by giving manufacturers a cheap way to transport materials and finished products.
  - 2nd the railroad boom created hundreds of thousands of new jobs for both railroad workers and miners who provided iron for the tracks and coal for the steam engine locomotives.
  - 3rd the railroad boosted England's agricultural and fishing industries which could transport their products to distant cities.
  - 4th by making travel easier, railroads encouraged country people to take distant city jobs and lure city dwellers to resorts in the countryside.