The Industrial Revolution

(1750-1914)
I. **Industrial Revolution** - transition from human and animal power to machines and new technologies
A. **Agricultural** Revolution- use of new technology & **machines** on farms
1. Greatly increased *food supply*, and along with medical advances, led to huge *population* increase.
Crop Rotation

CROP ROTATION (1730)
Charles Townshend

US CROP ROTATION (1900)
George Washington Carver (1864-1943)
Pre-Industrial Family
• https://www.youtube.com/watch?v=6QKIIts2_yJ0
Textile Machines

SPINNING FRAME (1771)
Richard Arkwright

SPINNING JENNY (1764)
James Hargreaves
B. The **Steam Engine**- built by James **Watt** in the 1770s

1. Provided power for the **textile** (clothing) and **coal** mining industries, also farm and transportation machines
James Watt (1736-1819)

Watt’s Up, Man?
C. **Steel Industry** - In 1850s Henry **Bessemer** developed the Bessemer process, created strong, inexpensive steel.

1. Coal & steel industries provided tremendous power but required huge **mining** operations and caused **pollution**
Bessemer Process
Henry Bessemer (1813-1898)

https://www.youtube.com/watch?v=i6B1yQJZdTg
Brooklyn Bridge (New York, 1883)
Statue of Liberty (New York, 1886)
Eiffel Tower  (Paris, 1889)
D. Because of its business-oriented culture and government, Great Britain took the lead in industrialization, soon spread to Western Europe and the US (early 1800’s)
**Why was Great Britain First?**

* Educated, business-orientated citizens
* Excellent system of rivers & canals
* Plentiful coal & iron
* Government gave entrepreneurs the economic freedom to capitalize on inventions ($$$)

Great Britain’s system of rivers & canals (1780)
1. By late 1800s, industrialized nations dominated non-industrialized nations throughout the world.
Why do you think the industrialized nations will be able to dominate non-industrialized nations?
II. Inventors and **Entrepreneurs** Develop Modern Industry
A. Electric power- people learned to use electricity

1. Michael **Faraday** built the first **generator** in 1831
Michael Faraday
(1791-1867)
Faraday's Generator (Dynamo)
2. Thomas **Edison** invented many devices including the **light bulb** in 1879 and the **phonograph**.

Thomas Edison (1847-1931)
and Nikola Tesla pioneered electric power plants & components in the 1880s, which made mass distribution of electric power possible.
"As soon as the facility is completed, it will be possible for a business man in New York to send instructions and have them instantly appear in type at his office in London or elsewhere. He will be able to call up, from his desk, and talk to any telephone subscriber on the globe. An inexpensive instrument, not bigger than a watch, will enable its bearer to hear anywhere, on sea or land, music or song, the speech of a political leader, the address of an eminent man of science, or the sermon of an eloquent clergyman, delivered in some other place, however distant. In the same manner any picture, character, drawing, or print can be transferred from one to another place."  

-Nikola Tesla (1908)
B. Advances in communication speed improvements
In 1837 Samuel Morse invented the telegraph - sent messages through electric impulses.
Telegraph

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2. Alexander Graham Bell built the telephone in 1876.
3. Guglielmo Marconi built the radio in 1895

Guglielmo Marconi (1874-1937)
Louis Daguerre’s’s Daguerreotype (1839)

Abraham Lincoln (1846)
C. Transportation advances- construction of roads, canals, and **railroads** increased economic activity, industrial power

1. George Stephenson improved the **train** and developed Britain’s first railroad in 1825
TRAINS (LOCOMOTIVES)

The Rocket
Steam Locomotive (Train)
The Steamboat (Robert Fulton, 1808)

The Clermont

(1765-1815)
2. Late 1800s development of the internal combustion engine, led to the automobile & oil industries
Gottlieb Daimler’s Car (1889)
3. Orville & Wilbur Wright invent the airplane in 1903
Wright Brothers’ Flight (1903)

The Flyer
D. New methods of Production: Eli Whitney developed *interchangeable* parts (helped workers produce goods faster)

Cotton Gin (1793)
1. Early 1900’s, automaker Henry Ford made efficiency improvements to the factory system with the assembly line.
Model T Ford
E. **Business** Industrialization- huge businesses with many investors called **corporations** developed
Many totally dominated an industry leading to a monopoly.
Think About It...

*What do you think was the most important invention from the Industrial Revolution & why?