UNIT FOCUS...
THE GROWTH OF INDUSTRY

Railroads Lead The Way
Inventions
An Age of Big Business
Industrial Workers
Setting up for Cornell Notes

- Draw a line across the paper about 3 lines down from the top
- Draw line down 1/3rd across the page.
- Put the title up top
- Heading in right corner

Railroads lead the Way

EQ: What did a growing transportation network mean for America?

ALL NOTES GO HERE!

PG. 31
INB PG. 31
Railroad Expansion

During Civil War, trains carried troops and supplies.

After war, railroad grew rapidly and drove economic growth in US (30,000 to 193,000 miles of track).

Railroad expansion came with consolidation, the practice of combining separate companies, in the industry.

Large companies buy smaller ones and force them out of business.

Makes larger companies more efficient, set standard pricing, makes processes more uniform.
Railroad Barons

Railroad barons- powerful individuals that controlled the nation’s rail traffic

- Cornelius Vanderbilt - empire stretched NY to Great Lakes
- James Hill - Great Northern Line, Minnesota to Wash.
- Huntington/Stanford- Central Pacific

Aggressive and competitive

Few laws that regulated business
Money money money!!!

Railroad Stimulate the Economy

Railroads carried raw materials
- Iron ore, coal, and timber to factories

Carried manufactured goods
- from factories to markets

Produce from farms to area cities
Improving the Railroads

- increase use made of rails, it necessary to expand and unify systems
- with rails running across the country, different lines had different rails with different widths and gauges
- With this, one train could not use another lines rails
- With this, it created gaps in service and made travel very slow
- With the companies consolidated, companies adopted “standard gauge”- 4′-8.5″ as the width of the track
- This allowed faster shipment of goods at a reduced cost
- To NO more loading and unloading from one train to another
Railroad Technology

- Improvements came along with the new technology

- George Westinghouse - air brakes
- Eli H. Janney - couplers
- Gustavus Swift - refrigerated cars
- George Pullman - luxury cars
Competition- to keep customers and get new ones.

**Rebates**- secret discounts were offered by large RR companies. Small companies couldn’t keep up!

**Pools**- secret agreements among RR barons; divided business among companies and set rates allowed higher rates/profits; tried to outlaw.

Who doesn’t want to be here right now?
Expansion into the West.

Growth of agriculture out West and manufacturing in the East.

People move from rural areas to cities.

**Time Zones** - measure travel by hours not miles; created a national system with 4 time zones.

Opens US to settling in new areas, changes transportation and communication
Brain Snack
UNDERLINE THE FIVE MOST IMPORTANT WORDS FROM TODAY’S NOTES. BE PREPARED TO EXPLAIN WHY YOU CHOSE THEM.
Bell work:

How did the Railroad stimulate the economy?
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EQ: What inventions brought America to be a leading world nation?

ALL NOTES GO HERE!
By 1910 Americans in cities drove cars through streets lit with electric lights

Department stores where they bought everything from kitchen sinks to shoes

Americans could do their shopping by mail or pick up the phone and order from a local store

The car, electric light and telephone were invented after 1870. Within a generation, they became part of everyday life.

Improvements in communications help unify the country and promote economic growth.
The Telegraph

Invented by **Samuel Morse** 1844

By 1860, US had 1,000 miles of telegraph lines managed by Western Union Telegraph company

Telegrams offered instant communication

Trained operators “transmitted”, or sent messages in morse code.

Storekeepers ordered goods
Reporters transmitted stories to newspapers

American used telegrams to send personal messages

Telegraphs linked the US to Europe (in 1860 news from Europe to US took several weeks on ships)

Cyrus Field laid a telegraph cable across Atlantic.

Transmitted messages within seconds bringing US and Europe closer.
The Telephone Rings in

Invented by Alexander Graham Bell
Born and educated in Scotland moved to US to study methods for teaching hearing impaired people to speak
Experimented with sending voices through electrical wires
1876 developed a device that transmitted speech – telephone
Formed the Bell Telephone Company in 1877
1890s had sold hundreds of thousands of phones
Businesses were first customers ten before long telephones were common in homes
The Genius of Invention

Between 1860 and 1890 US government granted more than 400,000 patents
Many inventions were designed to help business operate more efficiently

Christopher Sholes – typewriter (1868)
William Burroughs – adding machine (1888)

Other inventions for everyday life
George Eastman – small box camera a.k.a. Kodak
John Thurman – vacuum cleaner
Thomas Edison

dull by his teachers,
poor hearing,
trouble in school and
often did not attend
his mother home schooled

Twelve years old got a job with railroad

1\textsuperscript{st} invention – a gadget to send automatic telegraph signals (so he could sleep on the job)

1876 set up a workshop in Menlo Park New Jersey from here came the phonograph, motion picture projector and others

Most important invention by far is the light bulb (1879)

In 1882 Edison built the 1\textsuperscript{st} central electric power plant illuminating 85 buildings in New York City.
Took Edison’s work with electricity further
Developed and built transformers that could send electric power cheaper over longer distances
As a result, factories, trolleys, streetlights and lamps across the US could be powered by electricity
African American Inventors

A number of African Americans contributed to the era of inventions

- Lewis Howard Latimer – improved wire for light bulbs
- Granville Woods – electric incubator, electromagnetic brake (railroad), automatic circuit breaker
- Elijah McCoy – mechanism for oiling machinery
- Jan E. Matzeliger – shoemaking machine (performed many steps performed previously by hand)
Improvements ushered in a new era of transportation – Henry Ford’s automobile

Wanted to build an inexpensive car to last a lifetime

1903 established his own auto making company

1906 “we are going to get a car now that we can make in great volume and get the price way down.”

Then came the model T (1908)

“Anyone can afford, anyone could drive anywhere, almost anyone can keep and repair”

Sold 15 million Model T’s.
Ford pioneered a new cheaper way to make cars – assembly line

Each worker performed an assigned job again and again
The assembly line enabled manufacturers to produce large quantities more quickly
“Mass production” of goods decreased manufacturing cost, so products sold cheaper
Selling Goods

- Merchants looked for efficient ways to sell goods
  - One method was mail
  - Some created “mail order” business
    - Montgomery Wards
    - Sears Roebuck
  - Chain Stores—stores with same stores in many places grew quickly
    - “five and ten” stores specialized in everyday household and personal items at bargain prices
Brain Snack
Draw It!
On the TOP HALF on Page 32 INB - Draw an Inventor & their Invention. On the BOTTOM HALF on Page 32 INB title the section – Review Quiz: Name 5 inventors and describe the inventions they are known for.