Know and be able to

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<th>KNOW</th>
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<td>explain the Industrial Revolution by:</td>
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<td>• mapping regional manufacturing zones in different regions of with different specific strengths.</td>
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<td>• compare and contrast pre-industrial, industrial, and post-industrial life and landscape and give examples of each.</td>
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<td>• describing how site and situation factors influence the location of manufacturing and give examples.</td>
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<td>cottage industry</td>
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READINGS
1. Rubenstein, Chapter 11: *Industry*


THE INDUSTRIAL REVOLUTION

1. Regarding the Industrial Revolution:
   - What?
   - Where?
   - When?

2. Cottage Industry: Industry before the Industrial Revolution was widespread, rather than strongly localized (clustered) and was known as “cottage industry.” Define this term.

DIFFUSION OF THE INDUSTRIAL REVOLUTION

3. Iron Industry: Define the following. Give several facts
   -�
   -�

4. Coal:
   a. define coke:
   b. How is the distribution of steel and iron industry influenced by coal?

5. Transportation:
   a. Why was development in transportation necessary?
   b. What two forms of transportation grew rapidly?

6. Textiles:
   a. define: textiles
   b. How did steam power transform this industry?

7. Chemicals:
8. Food Processing:
How did the industrial revolution and factory system contribute to the growth of food processing?

9. MAP 1: (p. 347). Label the important industrial cities of Great Britain.

10. MAP 2: (p. 347) Circle and label Europe's Industrial areas: Rhine-Ruhr Valley; Mid-Rhine; Po Basin; Northeastern Spain;
11. Circle and Label North America's Industrial Areas: Middle Atlantic; Mohawk Valley; Pittsburgh-Lake Erie; Western Great Lakes; Southern California; Southeastern Ontario.

12. Label/name the 5 industrial cities of Japan:

13. Label 3 industrial areas of China with 6 cities.
MODEL - Weber's Industry Model - Industrial Location Theory

- Alfred Weber's Theory of Industrial Location - 1909
- Still influential
- The selection of optimal factory locations
- Helps with the minimization of land, labor, resources, and transportation costs
- Manufactured goods have a variable-cost framework that affects the potential location of factory sites
- Weber states that in terms of location, manufactured goods can be classified into two categories
- They are based on the amounts of inputs in relation to product outputs

Manufactured Goods classified into 2 categories - SITUATION

1. **Weight-losing or bulk reducing**: This involves a large amount of inputs that are reduced to a final product that weighs less or has less volume or bulk than the inputs. These factories tend to be located near the inputs that lose the most bulk in the manufacturing process, like trees or metal ore.
   - There is only 1 major input, such as seafood packaging, lumber mills, and metal or-processing or smelting.
   - Industrial location is in very close proximity to the resource location.
   - By comparison, where there is a # of major inputs to the production process, location must be balanced given the variable transportation costs of each input.
   - The inputs that lose the most bulk in the production process are relatively more expensive to transport than those inputs that could represent a more significant portion of the finished product.

**Example: Steel**

- Industrial location of steel is dependent on 4 major inputs: iron ore, cola, limestone and water.
- Iron ore has the lowest loss of volume of the finished product.
- Limestone is used to refine the steel and give its comparative lightness and strength.
- Coal refined into coke to burn hotter, is completely lost during production.
- Water is lost also which is required in large amounts to cool steel products so that they retain their form.
- Condensers often capture steam produced and recycle it into liquid.
- Iron ore is **distant elastic**, meaning it can be transported over short or long distances to the steel plant.
- Coal, limestone, and water need to be in **close proximity**.
- In US, steel production around Pittsburgh has consolidated in the 1970s using small local sources of iron.
- As production later expanded, the iron fields near Lake Superior became the main supplies of iron ore (taconite) to large firms like United States Steel.
Key Issue #2 Notes: Why Are Situation Factors Important? Weber’s Model

- At this time, steel industry expanded to port locations on the Great lakes like Cleveland, Toledo, Detroit, and Gary, Indiana.
- In the case of U.S. Steel’s plan in Gary, just outside Chicago, the company found that by not having to transport ore from Lake Erie to Pittsburgh by rail, they were able to cut transportation costs.
- Today, new steel plants tend to be much smaller operations that focus on specialized steel products.
- Steel mini-mills run by companies such as NUCOR have a # of building materials, vehicle parts, and high-tech steel alloys for medical and aerospace sectors.
- Some of the mills are located in old steel-producing cities. But others have been constructed in Southern states where land and labor are less expensive and there are fewer regulations.

2. Weight-gaining or bulk-gaining manufacturing involves a # of inputs that are combined to make a final product that gains bulk, volume or weight in the production process. These factories tend to be located closer to consumers because the cost of transporting the finished product is more than the cost of transporting the inputs, like refrigerators.

- Weight-gaining manufacturing involves the assembly of several inputs into a finished product.
- As this product is more bulky and thus more costly to transport, the factory location should be relatively close to consumers to minimize delivery costs.
- Basic example is bread. Flour from wheat grown in regions like the Great plains is combined with water, sugar, and yeast to make dough that rises from the yeast’s CO2 production. Once baking is complete, the loaf of bread has gained significant volume compared to its inputs. An added issue for food products like bread is the limited shelf life. That also affects industrial location.
- Bread, milk and other perishable products tend to be manufactured in many individual plants that serve the local regions.
- The decentralized network approach keeps fresh products in stores longer by reducing transportation time.
- Bread production is also decentralized that bakeries are found in all cities and are an example of ubiquitous industries.
- Frozen foods are made in large centralized facilities, which then ship to stores and grocery warehouses across the country.
- When Luigino’s Inc., a maker of brand frozen dinners, first selected a plant location, they chose the small town of Jackson, Ohio, a central location in the eastern half of the US. From this low-cost rural location, delivery trucks could easily access a # of nearby interstate highways. Within 24 hours, trucks leaving Jackson could reach 60% of their consumers in the USA and Canada.
Key Issue #2 Notes: Why Are Situation Factors Important? Weber's Model

Geography of Supply Chains

- Supply chain is when parts are assembled into components that are then assembled together to create larger finished products.
- Automobiles are an example of heavy industry that requires a large supply chain network to support the assembly of a final product.
- As price and corporate profit requirements have increased over time, the size of supply chain regions have expanded.
- In 1903, when Henry Ford opened his River Rouge plant in Detroit, every part of the car was made in one large factory complex.
- The exception was tires which were highly specialized product made for Ford by Firestone Akron.
- Fordist production (Fordism) relied on a single company owning all aspects of production, from steel manufacture to advertising.
- In the Post-Fordist era, car companies changed and became dependent on large networks of regional supply chains that, in the case of Detroit-area assembly plants, stretch throughout the Midwestern USA, with some specialized electronic parts coming from overseas suppliers.
- Outsourcing is common in auto parts, and car companies rely on several other companies to provide vehicle components such as brakes, electronics, glass, and specialized plastics. Car companies must still oversee the quality of supplier products.
A. Footloose Industry

- Describes businesses whose locations are not tied to resources
- Not tied to transportation
- Not tied to consumer locations
- Footloose can be located anywhere executives desires
  - ✓ corporate headquarters
  - ✓ customer-service call centers
  - ✓ research and development centers
  - ✓ software development centers
  - ✓ accounting and insurance service centers
  - ✓ business consulting service centers

B. Alfred Weber’s Theory of Industry - Least Cost Theory - 1909

- 2 Geographical costs: situation and site
- Situation equals 2 options:
  a. Bulk- reducing (copper) or b. Bulk-gaining (soda, cars, bread) (fabricated metals
     [scrap metal], beverages, perishables [newspaper], single markets [car dials]
- Selection of an optimal factory SITES includes:
  a. land  b. labor  c. capital
- Distance from market equals higher cost.

C. New International Division of Labor (reorganization/relocation of economic activities/jobs
from a national to a global scale)

Key Features - What does each bullet/star mean?

- Economic interdependence/globalization
- Transportation/communication  * Foreign management
- Outsourcing/offshoring  *Trade Agreements

Vocabulary NOT Found at the Back of Chp. 11

a. Vertical integration: traditional mass production where a company controls all phases of a
   highly complex production process.
b. Just-in-time deliveries: shipping parts and materials to arrive at a factory moments
   before they are needed. Example: car dials to Detroit automakers.
c. Supply chain: an industry like the automobile where a chain of inputs are needed in
   forming the end product.
d. Agglomerations: concentration of human activities in a cluster or around a central place
e. Deglomeration: occurs when a location is overloaded with similar firms and services.
f. Footloose: see definition above
Key Issue 3 - Chapter 11 Industry


1. In the introduction above "Labor", what are the 3 important site factors?
   a. b. c.

LABOR

2. The most important site factor at a global scale is __________________________.

3. Define: labor intensive industry:

4. Explain why a labor-intensive industry is not the same as a high-wage industry? p. 356

5. Explain: Although auto workers earn relatively high wages, why are they not considered to be part of the labor-intensive industries? p. 356

Textiles: Labor Intensive p. 356-357

6. Define: textiles:

7. What are the 3 principal steps of textile and apparel production?
   a. b. c.

8. Before the Industrial Revolution, what two types of people performed spinning and carding? a. b.

9. Two-thirds of the labor-intensive industry of spinning is done in what country? _________
10. Textile and Apparel Weaving: 93% of the world's oven cotton fabric is produced in _____________.

Textile and Apparel Assembly

11. _______________is probably an even older human activity than spinning and weaving.

12. The first functional sewing machine was invented by Thimonnier in 1830 from what country? _______________

13. Two-thirds of the women's blouses sold worldwide in a year are sewn in _______________.

LAND p. 360

14. Early factories located inside factories due to:
   a. _______________
   b. _______________
   c. _______________

15. The site factor that cities have always lacked is abundant _______________

16. Early factories were typically _______________ buildings.

17. Describe typical contemporary factories that have abundant land. How are they set up?
   a. _______________
   b. _______________
   c. _______________

Environmental Factors p. 360

18. Prior to the Industrial Revolution, economic activities needed:
   a. _______________
   b. _______________
   c. _______________
   d. _______________
   e. _______________

19. In the twentieth century _______________ became an important source of energy.

20. Name an industry, for example, which requires a large amount of electricity: _______________

CAPITAL p. 361

21. Define: capital:

22. In California's Silicon Valley even more important than proximity to skilled labor was the availability of _______________.

23. One-fourth of all capital in the USA is spent on _______________ in the _______________.

24. LDCs problem is two-fold: 2 problems:
Key Issue #4 - Chapter 11 - INDUSTRY

Why Are Location Factors Changing? pp. 361-369

1. In the introduction before "Attraction of New Industrial Regions", to minimize labor costs, some manufacturers are locating in places where ________ are lower than in tradition industrial regions.

Changing Industrial Distribution within MDCs p. 361

2. Within MDCs, industry is shifting away from areas of northwestern ________ and northeastern ____________________.

3. In the USA, industry has shifted toward: a. b.

4. In Europe, government policies have encouraged what?

Interregional Shifts in the USA p. 362

5. Why has the South lagged behind the Northern part of the USA in regard to Industrialization? a. b. c. d.

6. Present-day manufacturers are enticed to move production to the Southern states due to right-to-work laws. Explain.

7. Textile Production: U.S. textile industry was concentrated in the Northeast, esp. the ____________________ Garment District. p. 362

8. Today most textile and apparel production in the USA is in the ____________________

Interregional Shifts in Europe p. 363

9. Manufacturing has diffused from ________ Europe toward a. _________________ and b. _________________ Europe.

10. European Union provides assistance to two types of regions: Explain: p. 363

   a. b.
11. The Western European country with the most rapid manufacturing growth since the late 1990s has been _______________________.

12. In countries east of Germany and west of Russia have become major centers of industrial investment since the fall of communism in the early 1990s. Those 3 countries are:
   a. 
   b. 
   c. 

   International Shifts in Industry  p. 363-364

13. Increasingly important industrial areas outside of North America and Europe include:

   East Asia: facts
   -
   -

   South Asia: facts
   -
   -

   Latin America: facts
   -
   -

   Changing Distributions p. 364

14. ____________________ is the world’s largest steel producer with 38%.

15. Apparel workers in the USA’s Southeast are paid $_______ per hour wages and cannot complete with LDC countries’ workers who are paid less than $____ per hour.

   Outsourcing: p. 365

16. Definition: outsourcing

17. Definition: New international division of labor
18. Describe the Fordist approach:

19. Describe the post-Fordist approach: 3 rules
   a. 
   b. 
   c. 

20. Definition: just-in-time delivery

21. Explain the steps involved with just-in-time delivery:
   a. 
   b. 
   c. 

22. What are the advantages of just-in-time deliveries to the manufacturer?
   a. 
   b. 

23. What are the advantages of just-in-time deliveries to the producer?
   a. 
   b. 

24. Two kinds of disruptions to just-in-time deliveries are: a. b. 

25. CASE STUDY: Throwing BRIC at NAFTA p. 369
   a. NAFTA stands for: 
   b. BRIC stands for: 

Chp. 11 Industry Notes
Chp. 11 Notes — Industry