**Ch. 4 L. 1** Notes 5-3.1 Explain how the Industrial Revolution was furthered by new inventions and technologies, including new methods of mass production and transportation and the invention of the light bulb, the telegraph, and the telephone.

**1. What major change was brought about by the Industrial Revolution, and what did it require?**

The Industrial Revolution changed the US economy from one based on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and trade to one based on \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_. To manufacture goods, these factors were needed: raw \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and new \_\_\_\_\_\_\_\_\_\_\_\_\_ (technology).

Technology = new ideas + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**2. How did the government provide raw materials needed for the Industrial Revolution?**

The government supported the transcontinental \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and gave free \_\_\_\_\_\_\_\_\_\_\_ to homesteaders. This allowed raw materials to be shipped to \_\_\_\_\_\_\_\_\_\_\_\_\_, manufactured into products, and then shipped all over the country. Examples: grain became \_\_\_\_\_\_\_\_\_\_\_, hogs and cattle became meat, and iron ore became \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**3. How did mass production affect the Industrial Revolution?**

New methods: 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ process turned iron into steel (Andrew Carnegie). 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ line in meat packing industry, 3. interchangeable parts (Eli Whitney) and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lines (Henry Ford).

**4. How did inventions such as the telegraph and the telephone help the growth of industry?**

Telegraph: invented by Samuel \_\_\_\_\_\_\_\_\_\_\_ to help railroads communicate using Morse \_\_\_\_\_\_\_\_\_\_\_. It was also used to place \_\_\_\_\_\_\_\_\_ for raw materials and finished products.

Telephone: invented by Alexander Graham \_\_\_\_\_\_\_\_\_. It made communication quicker and easier than the telegraph.

**5. Who was Thomas Edison and what did he invent?**

He was an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and inventor who was paid by \_\_\_\_\_\_\_\_\_\_\_ to invent. He developed the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ light bulb and the phonograph and built a \_\_\_\_\_\_\_\_\_\_\_ generating plant in NYC.

**6. How did the light bulb and electricity help the US economy grow?**

Edison’s \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ light bulb made it possible to light \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as well as homes. The light bulb made electricity popular, so more electric \_\_\_\_\_\_\_\_\_\_ were strung, helping the growth of electric powered \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Electricity helped transportation since people could commute to work by electric \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Electric \_\_\_\_\_\_\_\_\_\_\_\_ cleaners and washing machines made life easier. New \_\_\_\_\_\_\_ opportunities were available for women.

**7. How did Thomas Edison help the US become a world power?**

More \_\_\_\_\_\_\_\_\_\_\_\_ stations were built and more businesses used electricity, so people could work longer. Edison’s invention led to the creation of the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Corporation.

**8. How did Alexander Graham Bell help the US become a world power?** He invented the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, founded a \_\_\_\_\_\_\_\_ to make new inventions, and started the \_\_\_\_\_\_\_\_\_\_\_ Telephone Company which became \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Co.

**ANSWER KEY**

**Ch. 4 L. 1** Notes 5-3.1 Explain how the Industrial Revolution was furthered by new inventions and technologies, including new methods of mass production and transportation and the invention of the light bulb, the telegraph, and the telephone.

**1. What major change was brought about by the Industrial Revolution, and what did it require?**

The Industrial Revolution changed the US economy from one based on agriculture and trade to one based on manufactured goods. To manufacture goods, these factors were needed: raw materials, workers, equipment and new ideas (technology).

Technology = new ideas + equipment.

**2. How did the government provide raw materials needed for the Industrial Revolution?**

The government supported the transcontinental railroad and gave free land to homesteaders. This allowed raw materials to be shipped to cities, manufactured into products, and then shipped all over the country. Examples: grain became cereal, hogs and cattle became meat, and iron ore became steel.

**3. How did mass production affect the Industrial Revolution?**

New methods: 1. Bessemer process turned iron into steel (Andrew Carnegie). 2. Dis-assembly line in meat packing industry, 3. interchangeable parts (Eli Whitney) and assembly lines (Henry Ford).

**4. How did inventions such as the telegraph and the telephone help the growth of industry?**

Telegraph: invented by Samuel Morse to help railroads communicate using Morse code. It was also used to place orders for raw materials and finished products.

Telephone: invented by Alexander Graham Bell. It made communication quicker and easier than the telegraph.

**5. Who was Thomas Edison and what did he invent?**

He was an entrepreneur and inventor who was paid by investors to invent. He developed the incandescent light bulb and the phonograph and built a power generating plant in NYC.

**6. How did the light bulb and electricity help the US economy grow?**

Edison’s incandescent light bulb made it possible to light factories as well as homes. The light bulb made electricity popular, so more electric lines were strung, helping the growth of electric powered factories. Electricity helped transportation since people could commute to work by electric streetcars. Electric vacuum cleaners and washing machines made life easier. New job opportunities were available for women.

**7. How did Thomas Edison help the US become a world power?**

More power stations were built and more businesses used electricity, so people could work longer. Edison’s invention led to the creation of the General Electric Corporation.

**8. How did Alexander Graham Bell help the US become a world power?** He invented the telephone, founded a laboratory to make new inventions, and started the Bell Telephone Company which became American Telephone and Telegraph Co.