What Powered Industry?

Weigh the changes behind Britain's industrial growth

MWH.C.5.1.B "Evaluate the extent to which the Second Agricultural Revolution and innovations in energy, mechanization, and transportation enabled industrialization."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline two farming changes, circle two machine or energy innovations, and number one transport improvement; beside each mark, note how it helped industrialization or what limited its effect.

More Than a Machine

1 In eighteenth-century Britain, a cotton mill needed more than clever machines. Farmers increased food supplies through crop rotation, selective breeding, and improved tools. As harvests grew, fewer workers were needed to produce some of the food eaten in expanding towns. Enclosure also pushed many rural families off shared land, though its effects varied by place. Some people sought wages in towns, while a larger population could buy cloth. These changes helped provide workers and customers for factories. Yet farm improvements alone could not turn cotton into thread quickly; producing large quantities still required new machinery and reliable power.

2 Early spinning machines multiplied the amount of thread a worker could make, and power looms later increased cloth output. At first, many mills used waterwheels, which limited where factories could operate. Coal-fired steam engines offered a more flexible power source, especially as engineers improved them in the late eighteenth century. Steam also pumped water from mines, helping workers reach more coal. This link between coal and engines made sustained machine production possible in many places. However, buying machines, building mills, and paying workers required investment; new technology did not create factories by itself.

3 Moving raw cotton to mills and finished cloth to buyers posed another problem. Canals carried heavy loads more cheaply than carts on rough roads; nineteenth-century railways later moved goods and people faster across Britain. Lower transport costs connected coalfields, factories, ports, and markets. Imported cotton and overseas buyers also mattered, linking British mills to trade networks built in part through slavery and colonial rule. Taken together, farming changes, machines, power, and transport greatly expanded the scale of industrial production. Their effects depended on access to capital, trade, and workers, so these innovations enabled industrialization without guaranteeing it everywhere.

2 ANSWER WITH EVIDENCE

Use the passage

1. To what extent could farming changes support factory growth on their own? Use two details from the passage.

2. How did steam power change where mills could operate compared with water power? What still limited the spread of steam-powered factories?

3. How did machines, steam engines, and coal work together to expand production?

4. How much did better transportation add to the effects of farming changes? Support your judgment with evidence from the passage.

3 YOUR TURN

Your own words

Imagine an inland British town around 1820 with improved harvests, available workers, coal, and money to build a mill, but no canal connection. In four or five sentences, judge how far it could industrialize, explain how two advantages work together, and propose one way to address its main obstacle using evidence from the passage.

ANSWER KEY

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HIGH SCHOOL · MWH.C.5.1.B

PART 1 · READ AND MARK

Underline two farming changes, circle two machine or energy innovations, and number one transport improvement; beside each mark, note how it helped industrialization or what limited its effect. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	To what extent could farming changes support factory growth on their own? Use two details from the passage.	**Farming changes supplied more food and helped provide workers or customers for factories, but factories still needed machinery and reliable power to produce cloth in large quantities.**
2	How did steam power change where mills could operate compared with water power? What still limited the spread of steam-powered factories?	**Waterwheels limited mills to sites with suitable water, while coal-fired steam engines offered a more flexible power source. Building mills and buying machines still required investment.**
3	How did machines, steam engines, and coal work together to expand production?	**Spinning machines and power looms increased output. Steam engines powered machines and pumped water from mines, helping miners reach more coal to fuel engines.**
4	How much did better transportation add to the effects of farming changes? Support your judgment with evidence from the passage.	**Farming changes helped supply workers and customers, while canals lowered the cost of moving heavy loads and railways later moved goods faster. Transportation connected factories to coalfields, ports, and markets, but factories also depended on capital and trade.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

The town could support a mill, but moving cotton and cloth would limit its growth. Improved harvests could help feed workers, while the available workers could operate spinning machines. Coal could fuel a steam engine, giving those machines power without requiring a waterwheel site. The town could invest in a canal connection because canals carried heavy loads more cheaply than carts and linked factories to ports and markets.

Accept supported judgments that weigh an innovation's contribution against a stated limit. For Part 3, the proposed action should address transport and fit the town's circumstances around 1820.