

Chapter 11

The Industrial Revolution

Textbook
p 268-301

SUMMARY

1. Read the summary below and fill in the missing words.

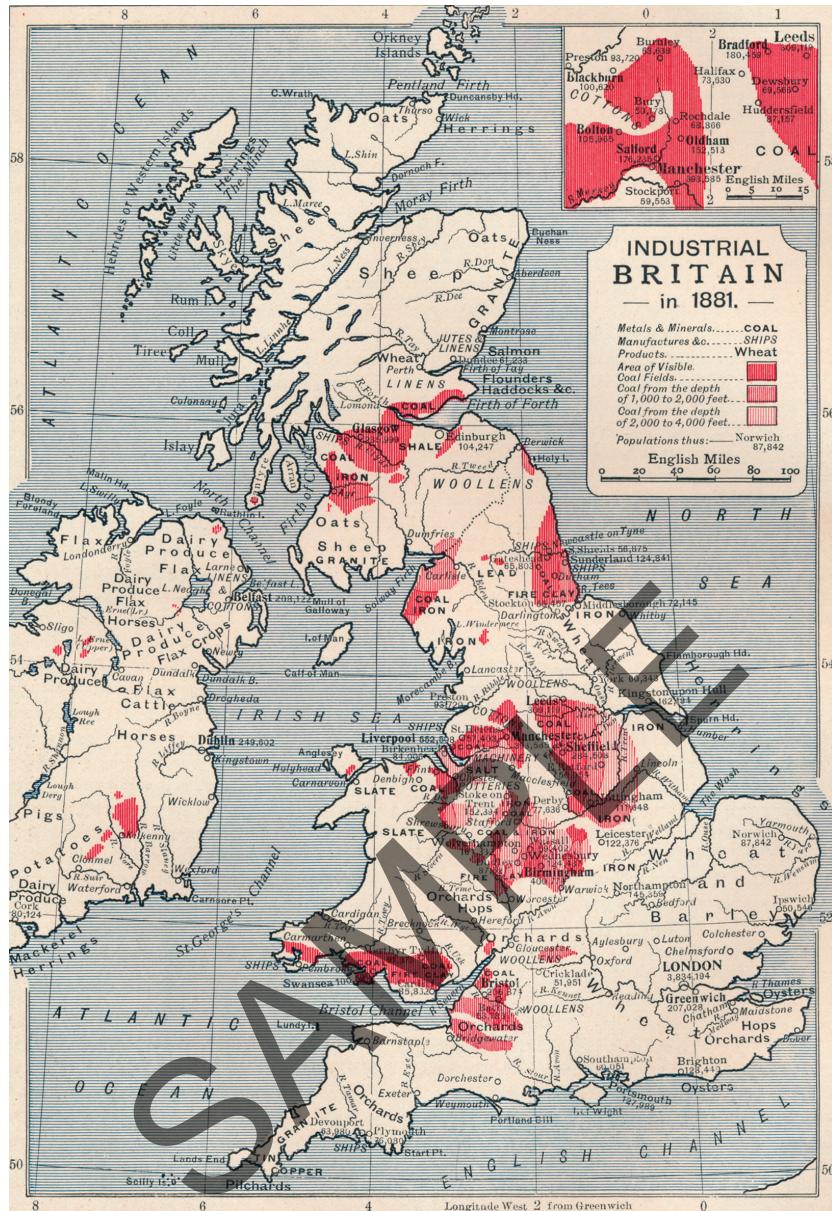
- (a) The Industrial Revolution took place between the years _____ and _____. It changed the way people farmed, worked and travelled.
- (b) We know about the Industrial Revolution through government reports, the population _____, patents of inventions, newspapers, writers such as Charles _____, paintings, drawings and, after 1834, the invention of _____.
- (c) The Industrial Revolution began in _____. It started there because of an increasing _____, migration, access to _____ materials across the empire, access to the materials _____ and _____, which were plentiful across the country, a high number of inventors and the establishment of _____, which were able to provide loans to businesses.
- (d) In order to feed the growing population, an _____ Revolution took place. Several improvements were made: _____ meant that fields were fenced off from one another, while the _____ crop rotation system was invented by Charles _____. Robert _____ introduced _____ breeding.
- (e) New farming machines were also invented: Jethro _____ invented the _____, while Cyrus _____ invented the _____. Both these machines made farming quicker and easier.
- (f) The improvements to farming meant food was more plentiful and cheaper. However, poorer farmers did not benefit as much and many of them moved to _____.
- (g) The _____ Revolution involved finding better ways to produce clothing for people. Textiles were made on a device called a _____. Many inventors made improvements to this device: John _____ invented the _____, James _____ invented the _____, Richard _____ invented the _____, Samuel _____ invented the _____ and Edmund _____ invented the _____. By the end of the eighteenth century, almost all spinning and weaving was done by these machines in factories.
- (h) These factories were powered by the steam engine, which was invented by Thomas _____. In 1769, James _____ improved this steam engine by inventing one that used less coal.
- (i) Iron was made through a process called smelting, which required raw materials to burn. Abraham _____ made coal the most popular raw material to burn after he discovered how to remove the sulphur from it. Once this was removed, it produced _____.

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- (j) Soon, a method of producing iron called puddling and _____ was invented by Henry _____. However, an even better material called _____ was produced by a converter invented by Henry _____. This material was more flexible and cheaper than iron, and it contributed to the development of ship-building and railways.
- (k) Increased production of goods meant that better methods of transport were now needed. Thomas _____ and John _____ improved the quality of roads by using stones and gravel to build them and by providing them with better drainage.
- (l) Another method of transport was invented that involved horse-drawn barges on _____. However, this was slow and was soon largely replaced by railways. George _____ invented the first steam locomotive, called the _____. This meant that the transport of goods and people became quicker and cheaper.
- (m) Ships powered by the _____ engine began to replace sail-powered ships. Isambard _____ launched a new ship called the _____, which could sail across the Atlantic to America non-stop and carry over 4,000 passengers.
- (n) The Industrial Revolution had a huge impact on the world. Many people began to move to _____ instead of living in the countryside. This led to overcrowded accommodation with poor sanitation and facilities. Areas with this type of accommodation were known as _____.
- (o) Life was hard for people during this time. Life expectancy was low, diseases such as _____ and _____ were common and a form of pollution called _____ was widespread. Working conditions were also hard: wages were low, hours were long and there were frequent accidents in factories.
- (p) Coal, the most important fuel during the Industrial Revolution, was extracted underground through mining. Tunnels called _____ were dug underground by people called _____, who went in search of the coal. Children called _____ worked underground by opening and closing trapdoors for carts to pass through, while other children called _____ pushed these carts filled with coal. Working in the mines was dangerous and there were often explosions. These were made less common after Humphrey _____ invented the miner's _____.
- (q) A group of people called the _____ were angry that the Industrial Revolution had produced machines that had replaced their jobs, and they often vandalised factories.
- (r) Another group of people called _____ demanded that the vote should be given to all men. This was known as _____. Other groups called _____ represented workers and demanded better working conditions.
- (s) The Industrial Revolution led to great changes in the world. Ideas such as capitalism, imperialism and nationalism developed. A form of socialism outlined by the thinkers Karl Marx and Friedrich Engels was known as _____.

RECALL

2. The Industrial Revolution began in Britain and brought great changes.



(a) List five reasons why the Industrial Revolution began in Britain.

- (i) _____
- (ii) _____
- (iii) _____
- (iv) _____
- (v) _____

(b) Which of these reasons do you think was the most important factor in starting the Industrial Revolution? Explain your answer.

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(c) List three other countries the Industrial Revolution spread to.

(i) _____

(ii) _____

(iii) _____

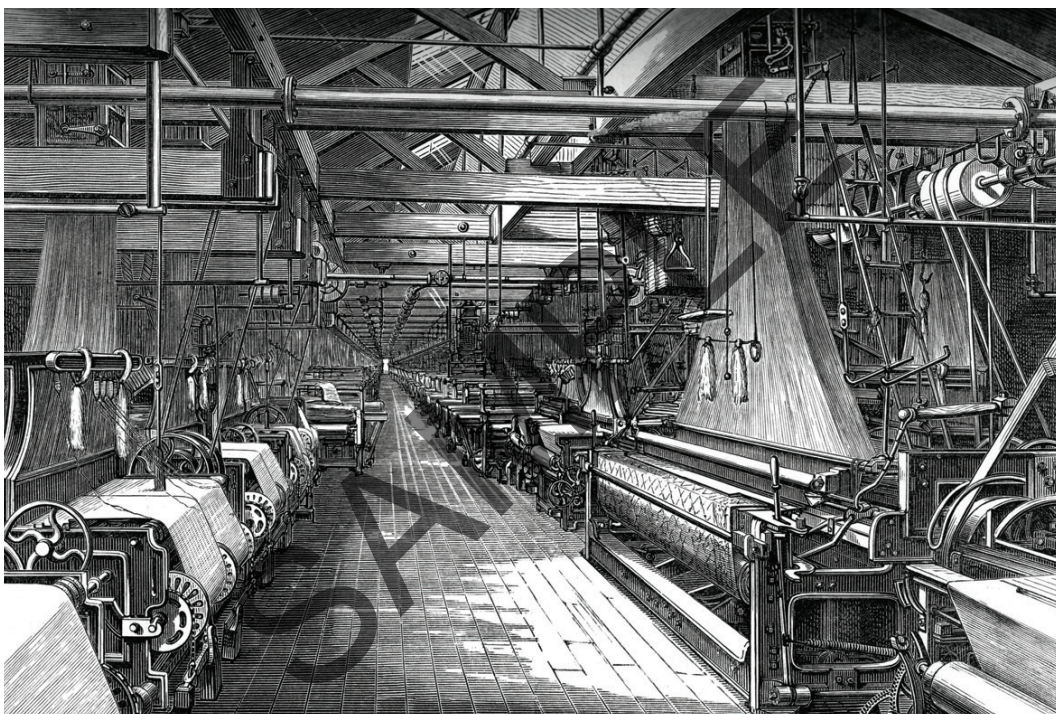
(d) State three ways the Industrial Revolution changed Britain.

(i) _____

(ii) _____

(iii) _____

3. Examine the picture below and answer the following questions.



(a) What product is being manufactured in this picture?

(b) Name two machines that would have been used to manufacture the product during the Industrial Revolution.

(i) _____

(ii) _____

(c) Give a description of the conditions for workers in factories such as this one during the 1800s.

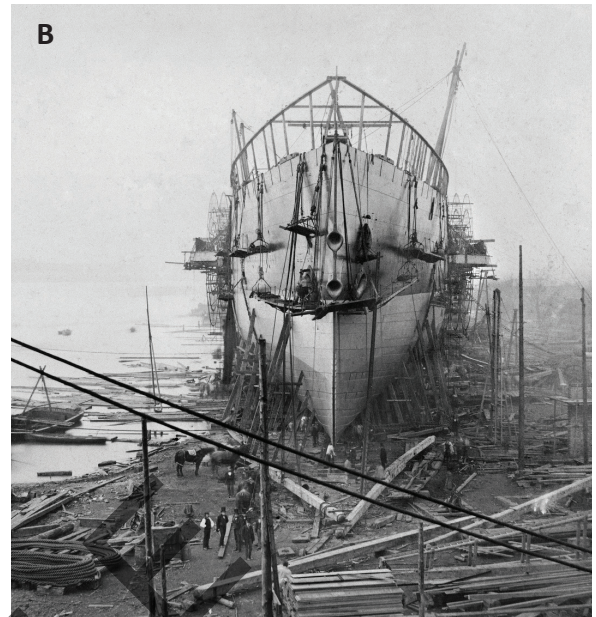
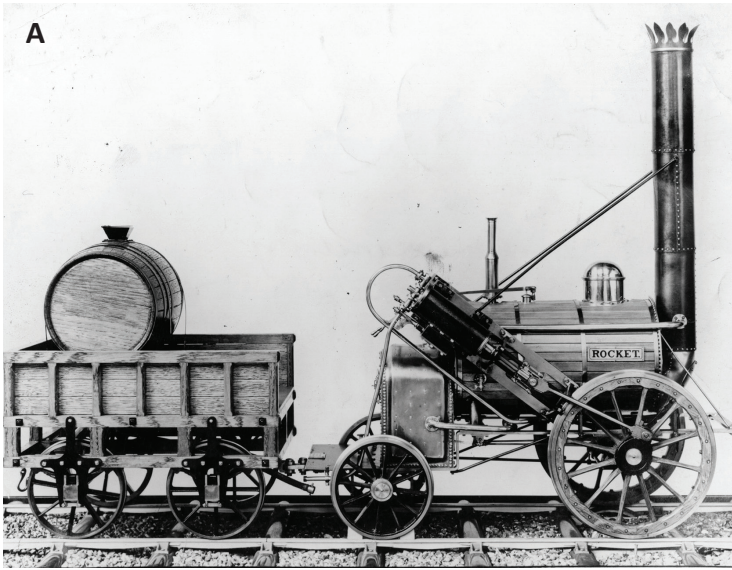
(d) Name two dangers that workers faced in a factory such as this one.

(i) _____

(ii) _____

CHANGE AND CONTINUITY

4. Look at the inventions below and answer the questions that follow.



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(a) Name each of the inventions above and the inventors associated with each one.

A _____

B _____

C _____

D _____

(b) List three ways the Transport Revolution impacted the world.

(i) _____

(ii) _____

(iii) _____

(c) Which of the inventions above do you think has had the greatest impact? Explain your answer.

(d) How has the use of *each* of the inventions shown in the pictures changed since the Industrial Revolution?

A (i) _____

(ii) _____

B (i) _____

(ii) _____

C (i) _____

(ii) _____

D (i) _____

(ii) _____

(e) What do you consider to be the greatest method of transport invented since the Industrial Revolution?
Explain your answer.

LOOKING AT THE EVIDENCE

5. The texts below describe working conditions for children during the industrial revolution.

A

Factory labour is a species of work, in some respects singularly unfitted for children. Cooped up in a heated atmosphere, debarred the necessary exercise, remaining in one position for a series of hours, one set or system of muscles alone called into activity, it cannot be wondered at – that its effects are injurious to the physical growth of a child. Where the bony system is still imperfect, the vertical position it is compelled to retain, influences its direction; the spinal column bends beneath the weight of the head, bulges out laterally, or is dragged forward by the weight of the parts composing the chest, the pelvis yields beneath the opposing pressure downwards, and the resistance given by the thigh-bones; its capacity is lessened, sometimes more and sometimes less; the legs curve, and the whole body loses height, in consequence of this general yielding and bending of its parts.

Source: P. Gaskell, *The Manufacturing Population of England*. London, 1833, pp.161–162, 202–203

B

The other is the old, the often-repeated, and as often-refuted, argument that the work is light. Light! Why, no doubt, much of it is light, if measured by the endurance of some three or four minutes. But what say you, my Lords, to a continuity of toil, in a standing posture, in a poisonous atmosphere, during 13 hours, with 15 minutes of rest? Why, the stoutest man in England, were he made, in such a condition of things, to do nothing during the whole of that time but be erect on his feet and stick pins in a pincushion, would sink under the burden. What say you, then, of children – children of the tenderest years? Why, they become stunted, crippled, deformed, useless. I speak what I know – I state what I have seen. When I visited Bradford, in Yorkshire, in 1838, being desirous to see the condition of the children – for I knew that they were employed at very early ages in the worsted business ... I asked for a collection of cripples and deformities. In a short time more than 80 were gathered in a large courtyard. They were mere samples of the entire mass. I assert without exaggeration that no power of language could describe the varieties, and I may say, the cruelties, in all these degradations of the human form. They stood or squatted before me in all the shapes of the letters of the alphabet. This was the effect of prolonged toil on the tender frames of children at early ages. When I visited Bradford, under the limitation of hours some years afterwards, I called for a similar exhibition of cripples; but, God be praised! there was not one to be found in that vast city. Yet the work of these poor sufferers had been light, if measured by minutes, but terrific when measured by hours.

Source: *Hansard's Parliamentary Debates*, 4 April 1879. 3rd Series, vol. CCXLV, pp. 355–356.

(a) Are the sources above biased or not? Give reasons to support your answer.

(b) How did the author of source B gather his information?

(c) According to the sources, for how many hours were the children expected to stand and work in the factory?

(d) What does the author mean by the sentence 'They stood or squatted before me in all the shapes of the letters of the alphabet'?

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(e) Are these sources for or against children working in factories? Give reasons for your answer.

(f) Using the evidence from the sources above, list five reasons why children were unsuited for working in factories.

- (i) _____
- (ii) _____
- (iii) _____
- (iv) _____
- (v) _____

(g) What changes were made over the nineteenth century by the government to protect children?

HISTORICAL EMPATHY

6. From your studies and the information in the sources on page 297 of your textbook, in your copybook, write a description of what it was like for a child working in a factory during the nineteenth century. Use the following headings as a guide:

Hours of work - Conditions of work - Disadvantages of working - Advantages of working

7. Look at the image below and answer the following questions.



(a) In three words, describe what life might have been like in urban slums during the nineteenth century.

(i) _____ (ii) _____ (iii) _____

(b) Pick out two things from the image that show how hard life was for the residents of these types of slums.

- (i) _____
- (ii) _____

DISCOVERING HISTORY

(c) Name two types of disease that regularly spread throughout urban areas during the Industrial Revolution.

(i) _____

(ii) _____

(d) Aside from disease, mention three other ways in which life was difficult for workers during the Industrial Revolution.

(i) _____

(ii) _____

(iii) _____

(e) What opinion do you think the artist who produced this image had about the living conditions in urban areas? Explain your answer.

EVALUATE

8. Consider all of the inventions that you have studied in this chapter. Choose the one you think made the biggest impact on the world and, in your copybook, write a paragraph explaining why you think so.
9. 'Necessity is the mother of invention' is a famous saying from an unknown source. In your copybook, write a paragraph explaining what you think is meant by this statement, using at least *three* inventions from this chapter as examples.

CONSIDER THIS

10. Imagine what it was like to live in Britain during the Industrial Revolution. In your copybook, write a paragraph about your life from the point of view of each of *two* of the types of people below. (*Hint*: consider aspects of life such as housing, diet, health, leisure, wealth, work, etc.)
- (a) Factory owner
 - (b) Farmer
 - (c) Inventor
 - (d) Factory worker
 - (e) Miner
 - (f) Reformer

REVISION

11. Explain the following terms:

(a) Slum _____

(b) Communism _____

(c) Selective breeding _____

(d) Collier _____

(e) Universal male suffrage _____

(f) Imperialism _____

(g) Chartists _____

(h) Hurrier _____

(i) Coke _____

(j) Steamship _____

(k) Loom _____

(l) Mineshaft _____

(m) Water-frame _____

(n) Seed drill _____

(o) Nationalism _____

DISCOVERING HISTORY

- (p) Vaccination _____

- (q) Trade Union _____

- (r) Enclosure _____

- (s) Socialism _____

- (t) Mill _____

- (u) Mineshaft _____

- (v) Luddite _____

- (w) Power Loom _____

- (x) Trapper _____

- (y) Capitalism _____

- (z) Norfolk Crop Rotation System _____

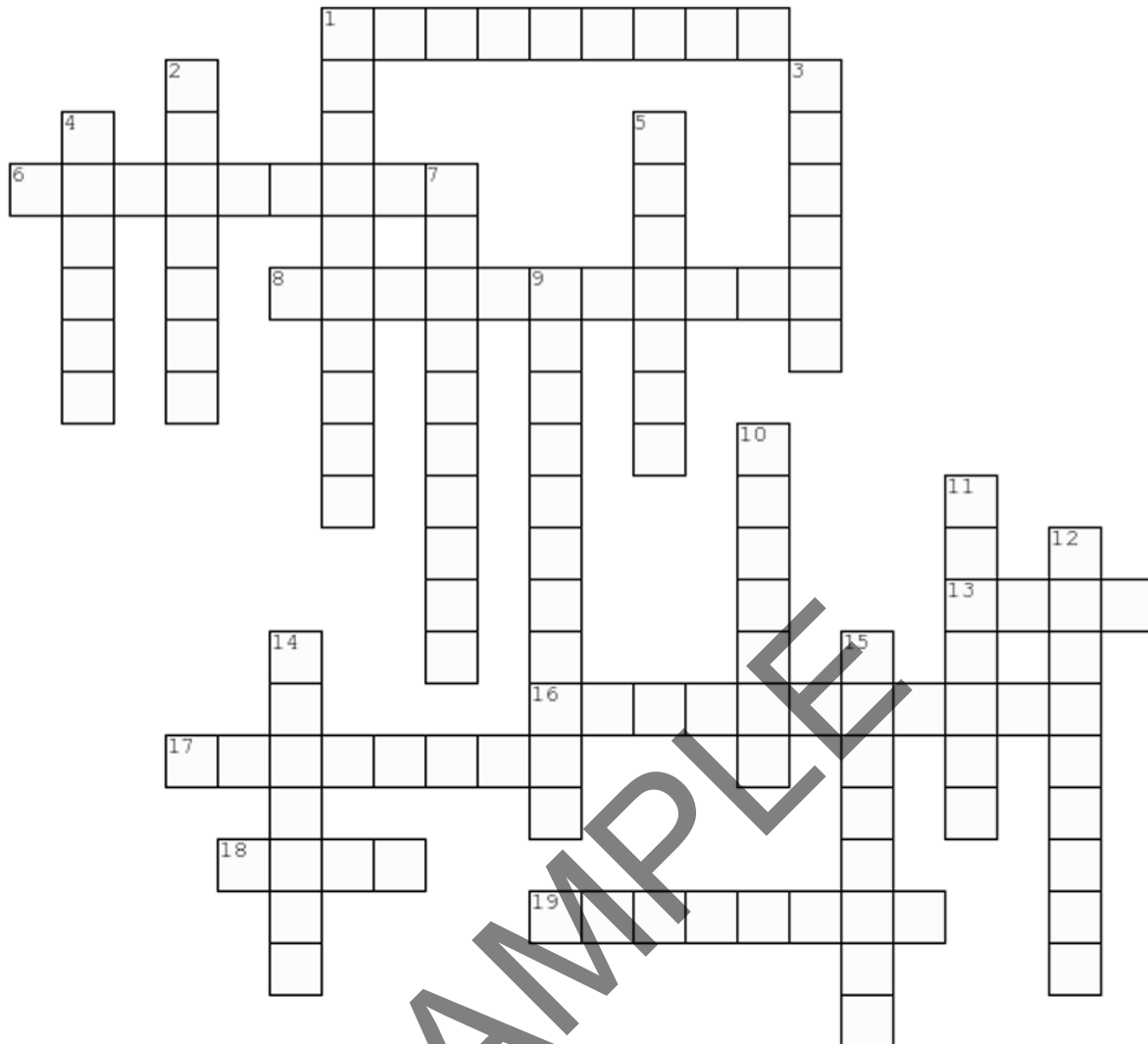
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12. Match each inventor in Column A with his invention in Column B.

Column A	Column B
(a) Richard Arkwright	(i) Seed drill
(b) James Watt	(ii) Steel converter
(c) Samuel Crompton	(iii) Puddling and rolling
(d) Robert Bakewell	(iv) The Great Eastern
(e) James Brindley	(v) Steam engine
(f) Isambard Kingdom Brunel	(vi) The Water-Frame
(g) Jethro Tull	(vii) Coke
(h) Edmund Cartwright	(viii) The Flying Shuttle
(i) Henry Bessemer	(ix) Crushed stone roads
(j) George Stephenson	(x) Mechanical reaper
(k) James Hargreaves	(xi) The Rocket
(l) Abraham Darby	(xii) Miner's safety lamp
(m) John MacAdam	(xiii) Steam engine and fly-wheel
(n) Henry Cort	(xiv) The Spinning Mule
(o) Cyrus McCormick	(xv) Norfolk crop rotation system
(p) John Kay	(xvi) Smoother roads
(q) Thomas Newcomen	(xvii) Power loom
(r) Charles Townshend	(xviii) Selective breeding
(s) Thomas Telford	(xix) The Spinning Jenny
(t) Humphrey Davey	(xx) Canals

DISCOVERING HISTORY

13. Complete the crossword puzzle below.



Across:

1. Group who campaigned for universal male suffrage
6. Economic system in which wealth is created and owned by workers
8. Injecting someone with a small dose of a virus to prevent them from developing a stronger virus
13. Machine used to weave yarn into cloth
16. Policy of expanding empires even when it affects the interests of other countries
17. Children who worked in a mine by pushing carts filled with coal
18. Baked coal, which was used to produce iron
19. The _____ converter turned iron into steel

Down:

1. Economic system in which wealth is created and owned by private individuals
2. Country in which the Industrial Revolution began
3. Trade _____ were organisations that demanded better working conditions for their workers
4. The first steam locomotive was named the _____ and was invented by George Stephenson
5. The Flying _____ was invented by John Kay
7. The _____ reaper made harvesting quicker
9. Belief that the needs of your own country are greater than others', or that your country should be independent
10. The Great _____ was one of the first steamships
11. Worker who dug coal from rock inside a mine
12. Economic system in which land ownership and wealth are organised by the state
14. _____ crop rotation system was invented by Charles Townshend
15. Robert _____ invented a type of farming called selective breeding

FURTHER RESEARCH

14. Choose one invention since 1800 that has *not* been mentioned in this chapter. Research and complete a project on this invention, considering the following:

- Who was the inventor and where did they get their idea/inspiration?
- How was the invention created?
- Has this invention been further developed or changed in any way since it was first invented?
- How has this invention impacted the world?

Choose one of the following formats for your project:

- Poster
- Essay
- PowerPoint presentation
- Report
- Booklet
- Video/digital recording



Films and documentaries

The Children Who Built Victorian Britain (BBC)

Seven Wonders of the Industrial World (BBC)

Why the Industrial Revolution Happened Here (BBC)

Queen Victoria's Empire (PBS)

Hard Times (1994)



Visit

Titanic Belfast, Belfast, Co. Antrim

Ulster Museum, Belfast, Co. Antrim

Whitehead Railway Museum, Belfast, Co. Antrim

National Maritime Museum, Dún Laoghaire, Co. Dublin

The Steam Museum, Straffan, Co. Kildare

Newmills Corn and Flax Mills, Letterkenny, Co. Donegal

The Butter Museum, Co. Cork

Irish Linen Centre and Lisburn Museum, Lisburn, Co. Antrim

National Museum, Collins Barracks, Dublin 7

Irish Railway Record Society, Dublin 8

The Avoca Mines, Co. Wicklow

Ulster Folk and Transport Museum, Holywood, Co. Down