

Week Four tasks

This chapter in the Kerboordle book is all about the Industrial Revolution and how Britain changed at this time. I will be setting you pages to read and tasks to complete each week.

To begin with, you will need to log in to kerboordle (check the help sheet on the HMS website if you are unsure). Once you have logged in, you will need to click on KS3 History 4th Edition. You will then be able to see any assignments you have been given, and complete them by clicking on the 'assessment' tab. You will also be able to look at the student book by clicking on 'digital book'.

7.6 – From roads to canals to railways. Read the pages and complete the end of lesson assessment quiz. As an extension, you could also try completing some or all of the tasks in the book.

7.6 From roads to canals to railways

The distance between London and Edinburgh is about 600km. If you travelled from one city to the other in the early 1700s, it would have taken you a week by boat or about two weeks by road. By 1830, you could make the same journey in just nine hours. So what changed? How did this shortened journey time become possible?

Objectives

- Outline how changes in industry led to changes in Britain's transport networks.
- Describe what these changes were and how they came about.

Why were transport improvements needed?

A fast, reliable transport system was vital for business and industry from the mid-1700s. Coal had to be taken from mines to factories and towns, cotton had to be moved from ports to factories, and finished goods had to be moved to markets. A fast and reliable postal service was needed too. Many industries used sea- or river-based transport, especially when moving heavy goods like iron or coal – but dozens of towns were miles from the nearest river. In the 1700s and 1800s, a series of developments and inventions completely changed Britain's transport system.

Time for the turnpikes!

In the early 1700s, Britain's roads were in a terrible state and businesses were suffering. The government decided to divide the main road network into sections, and each section was rented out to a group of businesspeople. The group was called a 'turnpike trust' and the first one was set up in 1706. Turnpike trusts promised to improve and maintain their section of road. In return, the trusts were allowed to charge a toll to every person who used their section of road. Much of the cash was used to improve the roads, and specialist engineers were on to create the finest roads Britain had ever seen.

By 1830, there were nearly 1000 turnpike trusts improving over 32,000km of roads, to dramatic effect. It might have taken you two weeks to travel by road from London to Edinburgh in 1745 – but by 1830 you could get there in about 48 hours!

In 1825, the Stockton and Darlington Railway became the first public transport system in the world to use steam locomotives (a steam engine that moved wheels along a set of rails or tracks – often called 'trains'). This was followed in 1825 by the Liverpool and Manchester Railway.

The first canal which was built in Britain was completed in 1761. It was built by the Duke of Bridgewater in 1759 and went from his mines in Cheshire to the city of Manchester. 'Canal mania' spread across the country for thousands of years (the man who built them as they all had to be dug out by hand).

Canal mania!

The turnpike trusts had given Britain some excellent roads – but they were still too bumpy for fragile goods like pottery, and too slow for heavy goods like coal and iron ore. So, a new type of transport was developed – canals. These were long, narrow, man-made channels of still water, which were ideal for moving heavy and fragile goods, so they soon caught on. By 1830, 6400km of canals had been built and it was possible to travel to every major town and city in England by barge.

Train travel

When steam engines first appeared in the 1700s, inventors soon worked out ways to make them turn wheels. The man credited with building the world's first railway locomotives was a Cornishman called Richard Trevithick. In 1804, to win a bet, his engine pulled ten tons of iron and 70 passengers for 14.5km in Merthyr Tydfil, South Wales. After this, there was a flurry of activity as engineers created lots of different locomotives. By 1930, there were over 32,000km of train track that carried millions of passengers every year. It had an amazing effect on journey time. The journey between London and Edinburgh that had taken two weeks by road in 1750 now took only nine hours by train.

Key Words

canal locomotive suburb
toll turnpike road

Meanwhile...

From the 1860s, London even had its own underground railway – or 'tube' – that took workers from the growing suburbs into the city. Other cities around the world soon followed – Budapest, Hungary (opened in 1896), Boston, USA (1897) and Paris, France (1900).

Over to You

- Write a sentence to explain each of the following:
 - turnpike trust
 - canal
 - locomotive.
- Each of the following dates is important in transport history:
 - 1825 • 1804 • 1706
 - 1761 • 1830
 Put the dates in chronological order on separate lines in your book. Beside each date, write what happened in that year – and explain why it was important in transport history.

Challenge

- Describe how the speed of travel between London and Edinburgh changed between 1750 and 1900.
- Write a clear and organised summary that explains the changes in transport between the early 1700s and 1900. Support your summary with examples.

7.7A – An age of invention. Read the pages and complete the end of lesson assessment quiz. As an extension, you could also try completing some or all of the tasks in the book.

7.7A An age of invention

In the eighteenth and nineteenth centuries, the British were very inventive! Some of Britain's greatest inventors and designers created new machines that did things better, faster and for longer. Britain's technology became the envy of the world and Britain was known as 'the workshop of the world'.

Objectives

- Identify some of the achievements of Britain's great inventors, designers and scientists.
- Judge who you think deserves the title 'Greatest Inventor and/or Designer'.

Significance

The next four pages look at seven influential British inventors, designers and scientists. You will decide which of these was the most significant figure during this time. Think about:

- Why were they important at the time?
- How did they change things?
- Are they still important now?
- Are they more important than any of the other people?

No. 1: James Watt

- Born in Glasgow, Scotland, in 1736, and worked as an instrument maker at the University of Glasgow.
- In 1764, Watt repaired an old steam engine. These engines were used mainly to pump out water, but were slow and kept breaking down. He greatly improved the engine, making it faster and more reliable. It used less coal too.
- In 1781, Watt designed a new steam engine that could turn a wheel. Now steam power could be used to drive machinery.
- By 1800, Watt and his business partner Matthew Boulton's factory in Birmingham was producing some of the world's finest steam engines. These steam engines helped develop Britain's industry as Britain became a world power.

INTERPRETATION B Adapted from an article on a history website, written by Daniel Ferreira (2019).

James Watt's steam engine was only steam-powered travel and manufacturing, but was also a defining development for the Industrial Revolution. Without Watt, the revolution may not have been possible. His very name was honoured as the unit for which we measure the strength of power worldwide: the watt. His contribution to science, especially his steam engine, brought the world from a farming-based society to one centred around technology and invention. Indeed, James Watt is one of the creators of the modern world of manufacturing.

No. 2: George Stephenson

- Born in Wylton, Northumberland in 1781, his first job at 14 was working as the local coal mine with his father.
- In 1814, he designed his first steam locomotive, the Blücher.
- In 1825, he produced a safety lamp for miners, which could be used safely in areas where methane gas had collected.
- In 1825, he was given the job of designing the Stockton and Darlington Railway. It opened in 1825 and used his locomotives.
- He designed and made locomotives for the first city-to-city line – Liverpool to Manchester – which opened in 1825. His success paved the way for other British railway engineers, helping Britain to become the leader in railways.

SOURCE C George Stephenson, with images of his first steam locomotive (the Blücher) and a bridge over the Stockton and Darlington Railway, appeared on British £5 notes between 1990 and 2003.

INTERPRETATION D Written by modern historian Bob Frowke, in 'Who? What? Where? Victorian' (2010).

'Before the coming of the railways, the fastest anyone could travel was the speed of a galloping horse. By the time George Stephenson arrived, you could travel from London to Newcastle by train in just nine hours, at an average speed of approximately 20 miles per hour (about 32km/h). It was Stephenson, the one of a kind in the Northumberland mines, more than anyone else, who created the British railway system. Before he retired in 1845, he had designed most of the railway which connects the major cities of the North of England.'

No. 3: Michael Faraday

- Born in Newington in 1791.
- He worked as a bookbinder where he became fascinated by science.
- He was most interested in electricity and magnetism and, in 1831, discovered how to generate electricity.
- His generator worked on the same basic principle that electric power stations work on today.

SOURCE E A British stamp from 1991 showing Faraday.

INTERPRETATION F Adapted from the Royal Society of Chemistry website (2019), an organisation set up in 1840 to advance science in the chemical sciences.

'Faraday was perhaps one of the most influential scientists who ever lived, whose ground-breaking research into the relationship between electricity and magnetism ultimately led to the invention of the electric motor. One of his most well-known inventions, the Faraday cage, is the basis of MRI scanners (used in hospitals that detect medical problems). He also discovered benzene (a chemical that had many uses before it was linked to its health in a dangerous way), invented the first electric light bulb (using a simple glass tube with a very small wick), and gave his name to the Faraday Effect and Faraday's Law.'

Over to You

- Complete the following sentences with the correct terms:
 - In 1781, a new steam engine that could turn a wheel was designed by _____.
 - James Watt and Matthew Boulton's steam engine factory was in _____.
 - George Stephenson designed and made locomotives for the first city-to-city line – the _____ Railway.
 - As well as using engineering, Stephenson also designed a safety lamp for _____.
 - Michael Faraday discovered a way to generate electricity in _____.
 - Faraday's basic idea of generating electricity is one that is still used today in _____.
- Look through the great inventors and designers featured so far and make brief notes on:
 - why they were important
 - how they changed things.