

Can you imagine life before
telephones, or the wheel? ()
can change the world!

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Great Inventions

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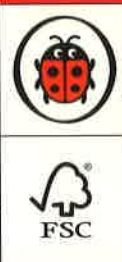
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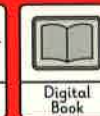
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Great Inventions

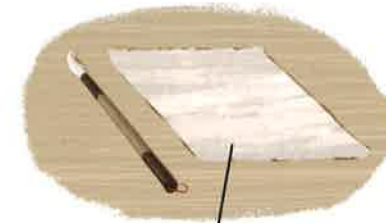
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Picture words



wheel



paper



printing press



vaccine



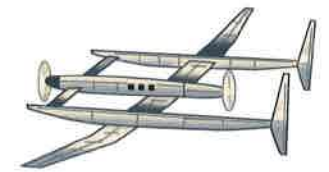
telephone



lightbulb



car



airplane



computer



internet

INTRODUCTION

About Inventions

An invention is something that nobody has made before—like a new **tool*** or a **machine**. An inventor is the person who makes it.

Can you imagine life before the internet, telephones, or the wheel? Great inventions can change the world!



Often, one thing is invented—made for the first time—by lots of people.

Someone has an idea, and then other people change and improve it, and help it to become real. Sometimes, different people try to invent the same thing at the same time.

The world is full of important inventions. Look around you. Can you see any?



CHAPTER ONE

The Wheel

When was the wheel invented?

The oldest wheels in the world were found in Europe and in **ancient** Sumer (part of Iraq today)—and they were made more than 5,000 years ago.



Why was the wheel important?

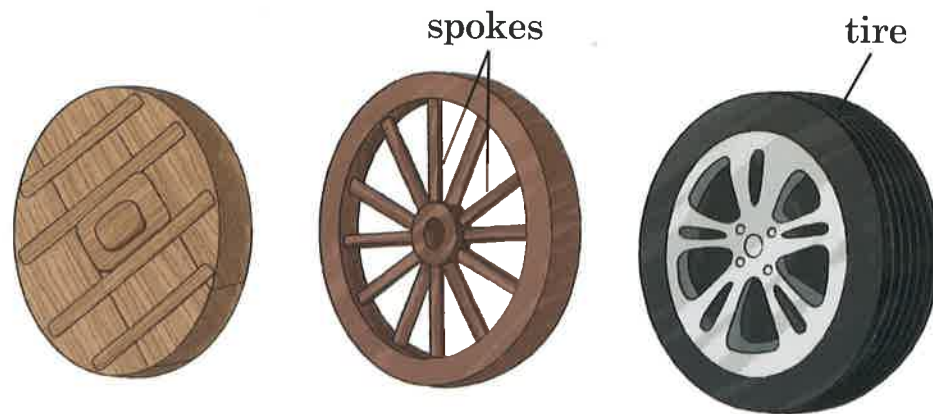
Before the wheel was invented, people had to walk and carry things from one place to another. After the wheel was invented, people could travel more quickly and carry their things on **carts**, so it was easier to travel a long way and move things.



How has the wheel changed?

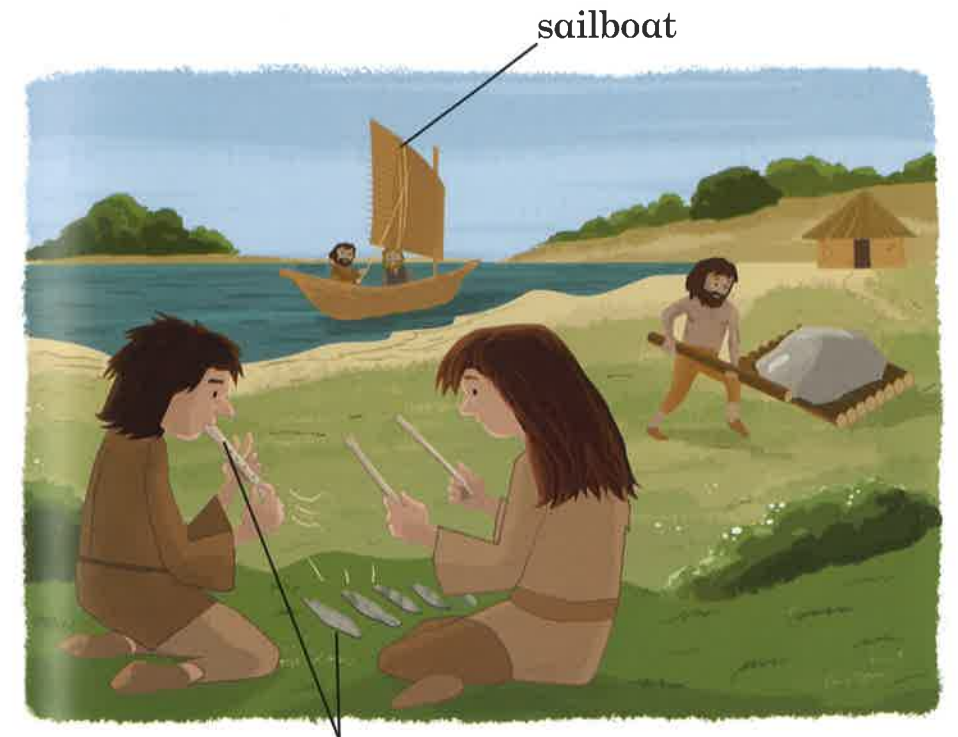
The first journeys by wheel were not fun! Early wheels were big circles made of wood, so they were very heavy, and they moved slowly. Later, **spokes** were invented.

Wheels with spokes were much lighter and faster, but passengers in carts could still feel every stone on the road! In 1888, tires—rings full of air—were added around the outside of wheels. Tires were better on rough ground.



Why wasn't the wheel invented earlier?

Today, wheels are everywhere—in our cars, our clocks, and our **electric** toothbrushes! But, amazingly, sailboats and musical instruments were invented *before* the wheel. **Scientists** say people didn't have the tools that they needed to make a wheel before this.



musical instruments

CHAPTER TWO

Paper

Who invented paper?

Imagine a world before paper was invented! People had to write on big pieces of soft rock, wood, or shells. Many years ago, people in China began trying to make paper.

A man called Ts'ai Lun found the best way of making the first real paper. People in other parts of the world soon began to copy Chinese paper-making.



How was the first paper made?

The first paper was made from parts of plants and trees, and bits of old **cloth!** These were chopped into pieces, mixed together with water, pressed, and then dried in the sun.

FUN FACT

Many bank notes are still made with cloth today.



How do we make paper today?

Now, people grow forests of special trees for paper. They cut the trees down, chop them into pieces, and use machines to make paper from them.



What's the future of paper?

Making paper uses lots of trees and lots of water, so it is bad for the environment. **Recycled** paper—paper that has already been used—is more popular now.

Inventors are even trying to make paper from fruits and vegetables like oranges and potatoes.



CHAPTER THREE

The Printing Press

What was life like before the printing press?

How long do you think it takes to copy a book by hand? That's how people made books 600 years ago, and it was *very* slow! There weren't many books, and they were expensive. Today, we have **printed** words all around us, in newspapers and books, on posters and on cans of food.



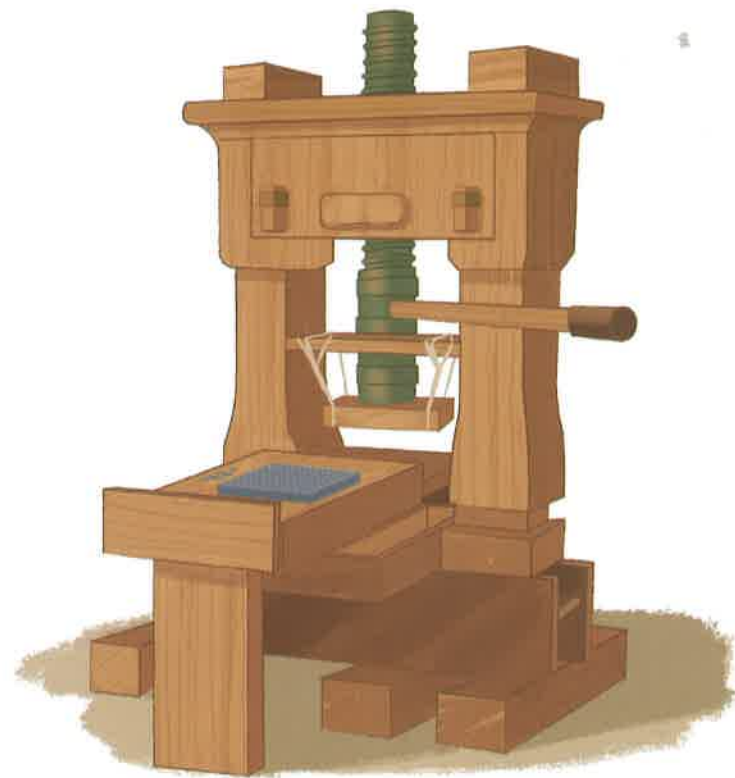
Who invented the printing press?

People in China tried many different ways of printing things before the fifteenth century. Then, in around 1440, the printing press that changed the world was invented by Johannes Gutenberg, in Mainz, Germany.



How did the Gutenberg Press work?

Gutenberg made metal letters which people could put together into words. He put **ink** on these and then pressed paper on them, again and again, to make printed pages. Then, he moved the letters so that he could make new pages.



18

Why was the printing press important?

It was much quicker and cheaper to make books with a printing press, so after 1450, many more people wrote and read books about lots of different subjects, like science and history.

FUN FACT

More than 500,000,000 copies of the Harry Potter books have been printed!



19

CHAPTER FOUR

Vaccines

What are vaccines?

You have probably had vaccines at school or at the doctor's to stop you getting dangerous **diseases**. Having a vaccine is like getting a small amount of a disease. Your body fights away the small amount of disease, so it then knows how to fight away the real disease, too.



When did people start having vaccines?

People started having vaccines many years ago in China and some other countries. People there cut the skin of a healthy person, and put in parts from the skin of someone with a dangerous disease. Then, the healthy person did not get the disease.



Who invented vaccines?

Edward Jenner was an English doctor. In 1796, he tested the vaccine idea with a disease called smallpox and wrote about it. Because of his work, people in many countries were given vaccines and saved from smallpox.



How important are vaccines?

They are very important. Before 1796, smallpox killed millions of people. When Jenner's vaccine was slowly introduced all around the world, the disease began to disappear. Since 1980, there has been no smallpox—and now there are vaccines for many other diseases, too.



CHAPTER FIVE

The Telephone

How important are cell phones?

Fifty years ago, there were no cell phones, and 150 years ago, there were no telephones at all. Today, most people spend more than four hours a day on their cell phones!



Who invented the telephone?

People often say that Alexander Bell, from the UK, invented the telephone—but several other people were trying to make telephones at the same time.

The first words that were spoken by telephone were, “Mr. Watson, come here, I want to see you!” That was on March 10th, 1876, and Alexander Bell was talking to Thomas A. Watson, who worked with him.



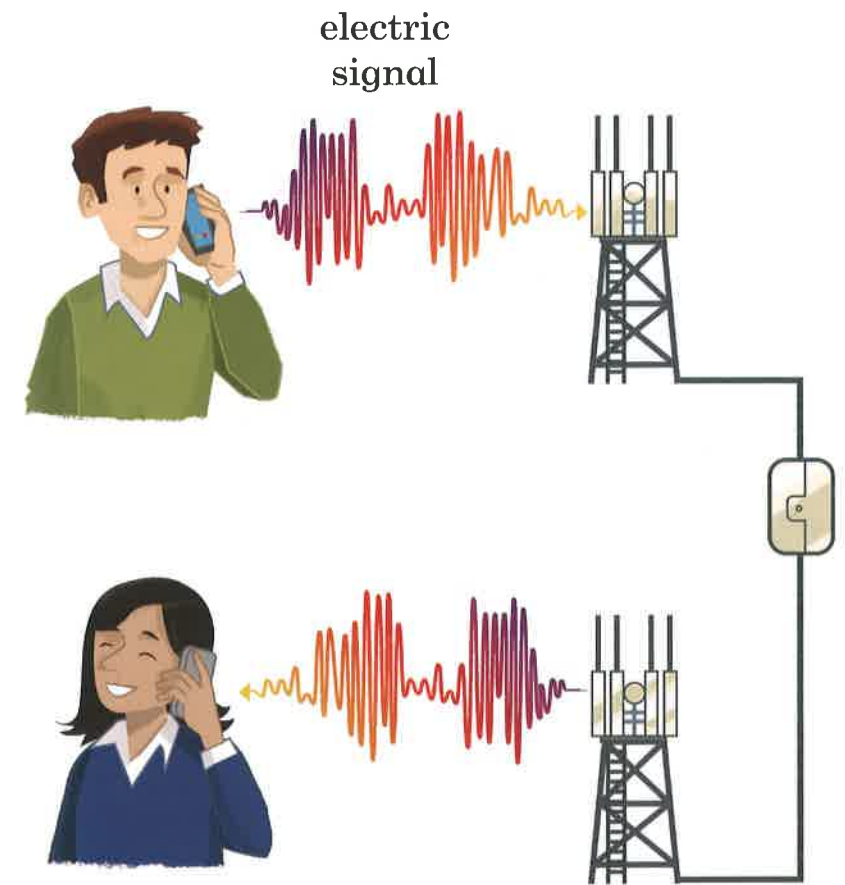
What were the first telephones like?

They had one part for your ear and another for your mouth. To make a call, you had to speak to someone called an operator and wait while they **connected** the telephone lines.



How do telephones work today?

Telephones and cell phones make electric **signals** from the sound of a voice. These signals travel by **wire**, or radio wave, to another telephone, which makes the sound of the voice from the signal.



CHAPTER SIX

The Lightbulb

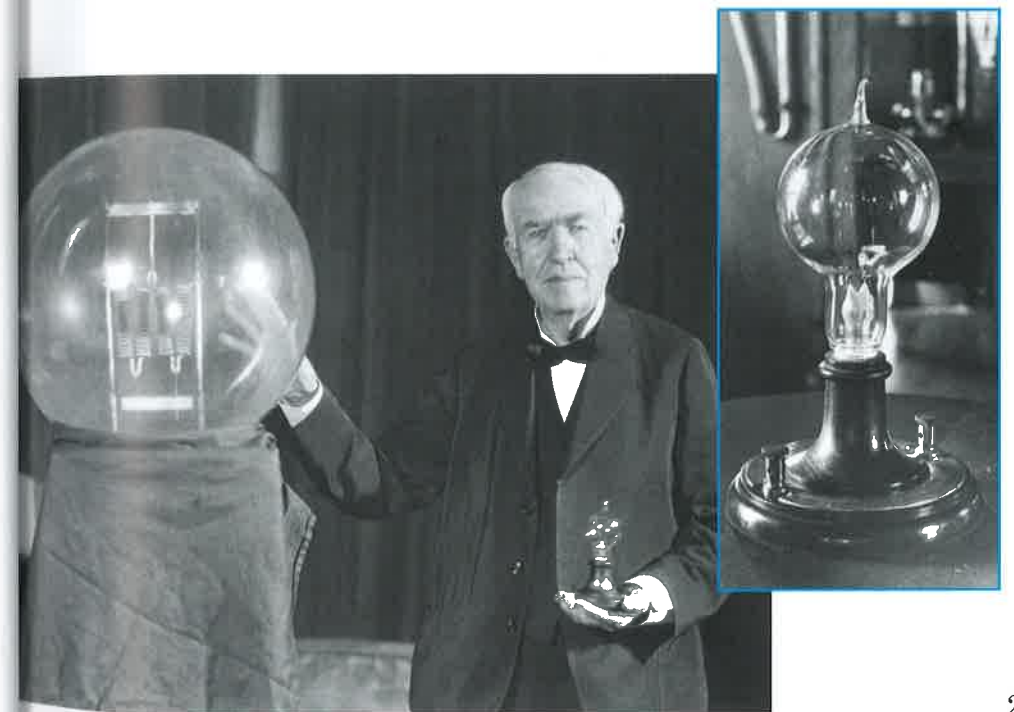
How did people see in the dark before the lightbulb?

For thousands of years, people used **candles** for light. In the early nineteenth century, gas lights were used, but these were dangerous. They started many fires and made the air dirty.



Who invented the lightbulb, and when?

Thomas Edison, an American, invented the lightbulb in 1879. Electric light was invented earlier that century, and many other people were trying to make lightbulbs at the same time, but Edison's was the first good one. His lightbulb was not too expensive, and it produced light for more than thirteen hours.



Why was it difficult to make the first lightbulb?

When Edison connected something called a filament to **electricity**, the filament burned and became very hot and bright, giving light.



He needed to find a cheap filament that burned for a long time, so he and his workers tried using thousands of different things for it. One of the things that they tried was hair from a beard!



FUN FACT

The filament that burned best was made from Japanese **bamboo**, so for several years Edison used that in his lightbulbs. Because of this, he is very famous in Japan!

CHAPTER SEVEN

The Car

When was the car invented?

The first **modern** car was called the Motorwagen, and it was completed by Karl Benz in Mannheim, Germany, in 1886. It had three wheels and a new type of **engine** at the back, which used gas.



Were there other cars before this?

A Frenchman called Cugnot built a car with a **steam engine** in 1769, but the engine was very heavy. Because of this, the car was slower than going by foot!



Back then, it was difficult and expensive to get from place to place, and many people just did not travel. Cars really did change the world!



FUN FACT

When cars were first invented, people thought that they were very dangerous. In the UK and the USA, a person with a red flag had to walk in front of the car to show people that it was coming!

When did the car first become popular?

For the first twenty years, only very rich people could buy cars. Then, in 1908, an American called Henry Ford built the Model T, which was light, strong, and less expensive than other cars. Ford sold 10,000 cars in 1908, and by 1923, he was selling nearly 2,000,000 Model Ts a year!

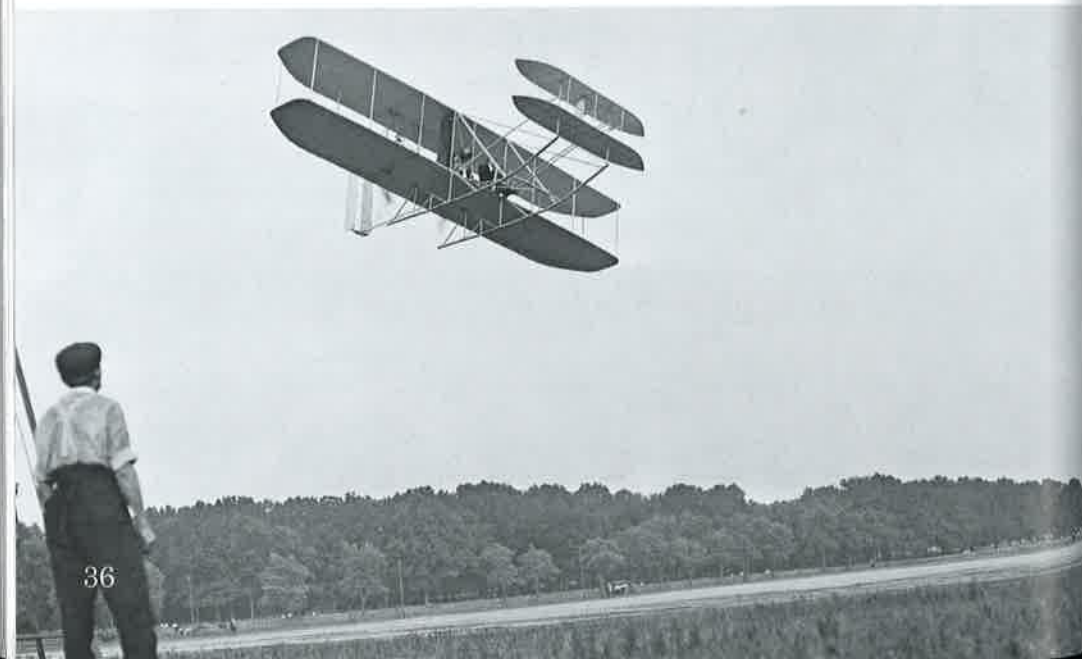


CHAPTER EIGHT

The Airplane

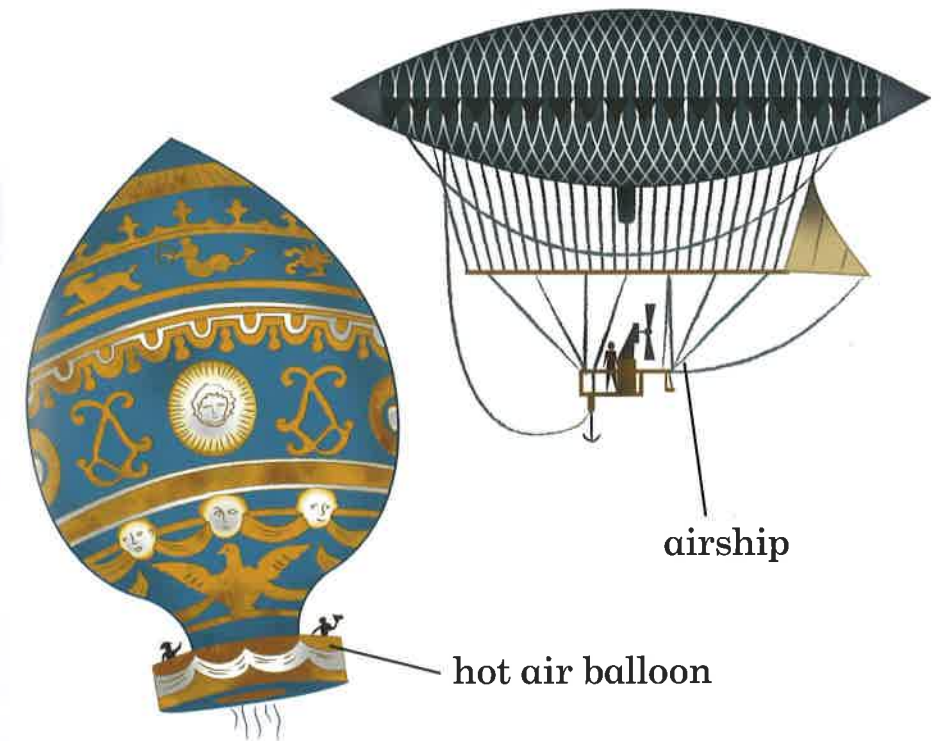
What was the first airplane flight like?

It was very short! Today, we can fly around the world, but in the first **flight**, on December 17th, 1903, Flyer 1 traveled just 37 meters across the beach at Kitty Hawk, in the USA. Orville and Wilbur Wright's airplane only flew for 12 seconds, but it was amazing for everyone. People could fly!



Did people fly before this?

People began flying in hot air balloons in 1783, and the first **airship** flew in 1852—but the Wright brothers' flight was the most important one. It was the first flight in an airplane that was controlled, had a gas engine, and was heavier than air.



How did the Wright brothers build their airplane?

They watched birds, flew lots of kites, and built and tested **models** before they made a real airplane. They also built a **wind tunnel** because they wanted to understand how wind affects flight.



FUN FACT

In 1986, less than a hundred years after the first flight, an airplane flew all the way around the world without stopping!



CHAPTER NINE

The Computer

Who invented the computer?

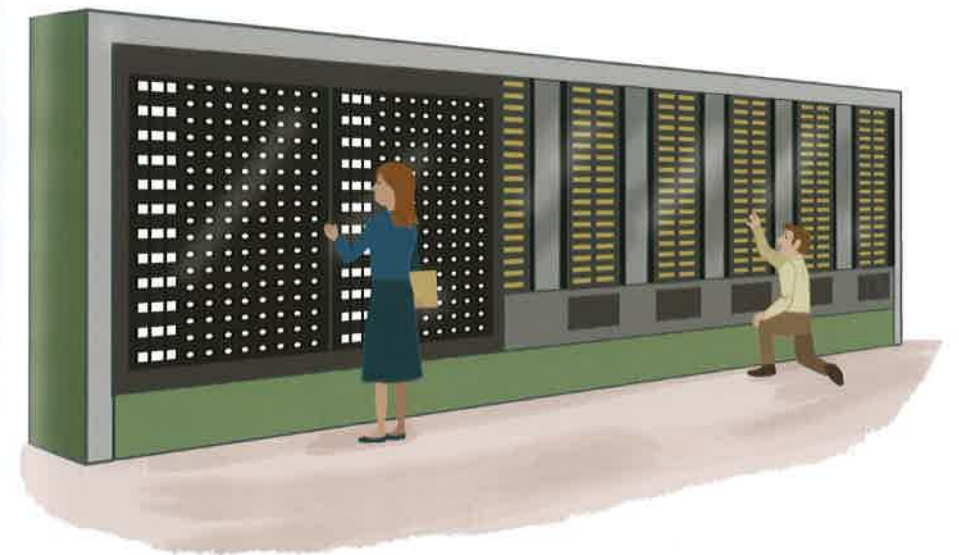
Lots of people! In the 1830s, Charles Babbage, with help from Ada Lovelace, drew plans for the first machine that could do the work of a computer.

Babbage never built his machine, but during the next 190 years, lots of people used his ideas to make new computers.



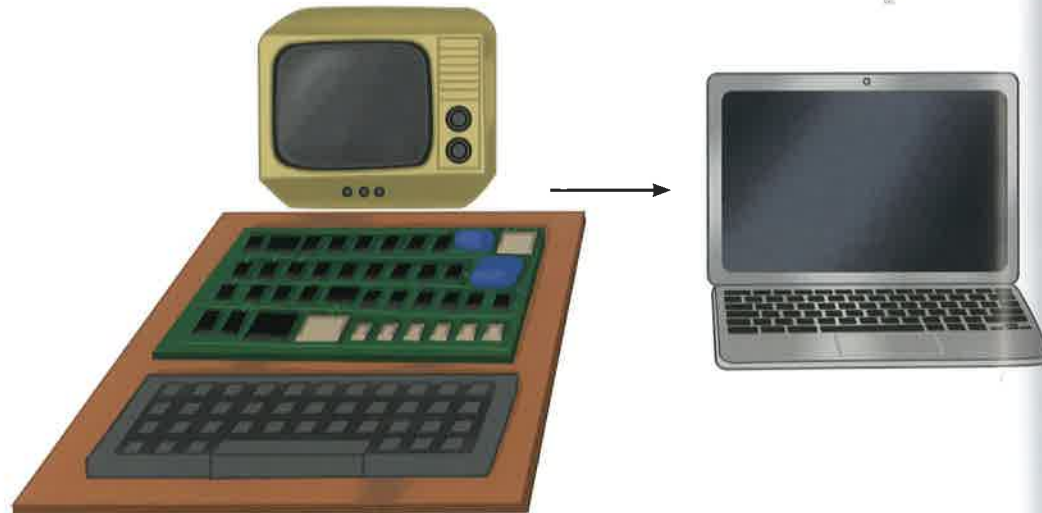
What were the first computers like?

The first modern computers were as big as a room, and they used lots and lots of electricity! They were used by people in Europe and the USA to do difficult maths during the Second World War.



How have computers changed?

Computers became smaller and smaller, but they were only used by scientists who understood all about them. Then, these people began to think, “Perhaps we can build computers that *everyone* can use!”



One of the first of these **personal computers** was made by Apple, in 1976.



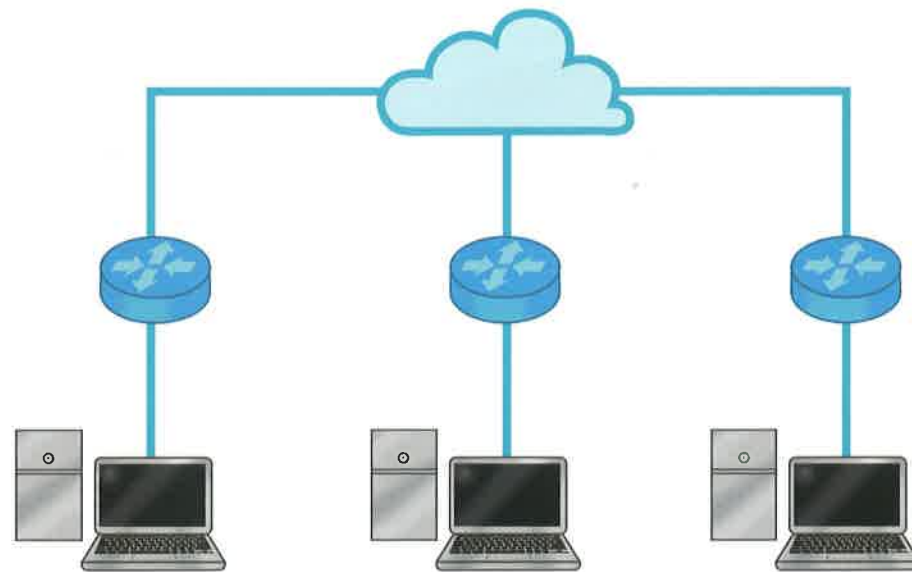
FUN FACT

Some of the biggest computer **companies**—HP, Google, Microsoft, and Apple—began in the garages of the people who started them!

The Internet

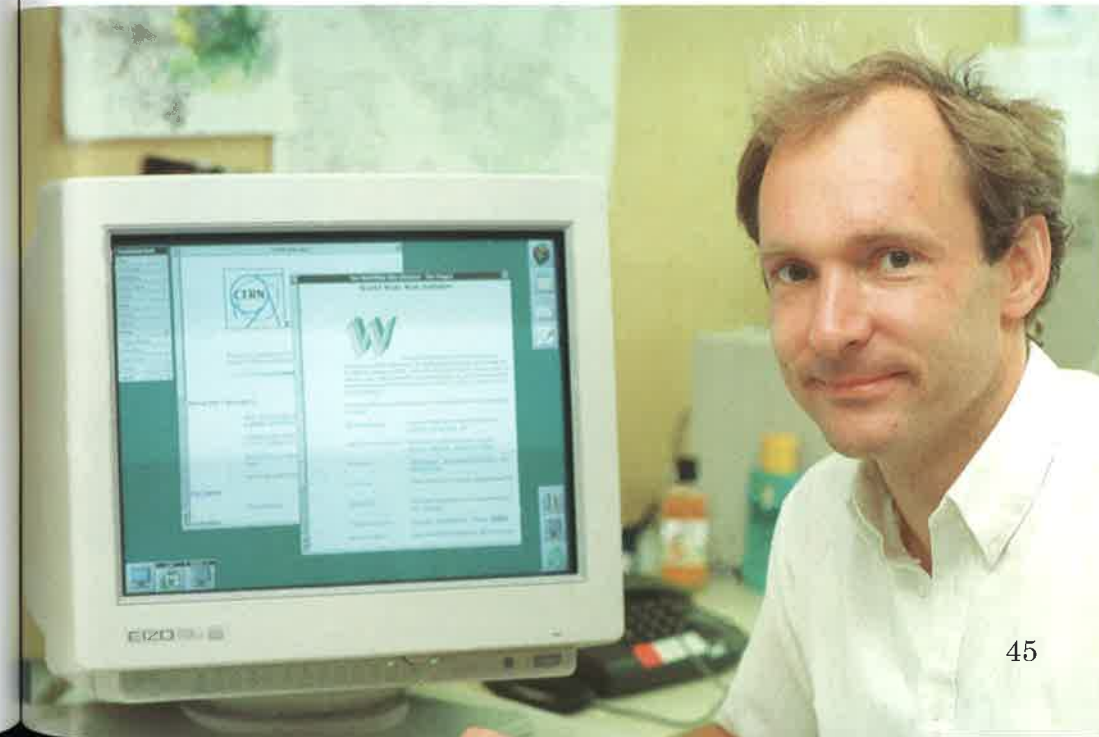
What is the internet, and when did people start to use it?

The internet is used to send information very quickly between computers all around the world. It was first used in 1969, in the USA. Like the computer, it was invented by lots of different people.



Who invented today's World Wide Web?

The internet that we use today—also called the World Wide Web—was invented by Tim Berners-Lee in 1990. It quickly became very popular. For the first time, people could make and use websites and send emails!



What do people use the internet for today?

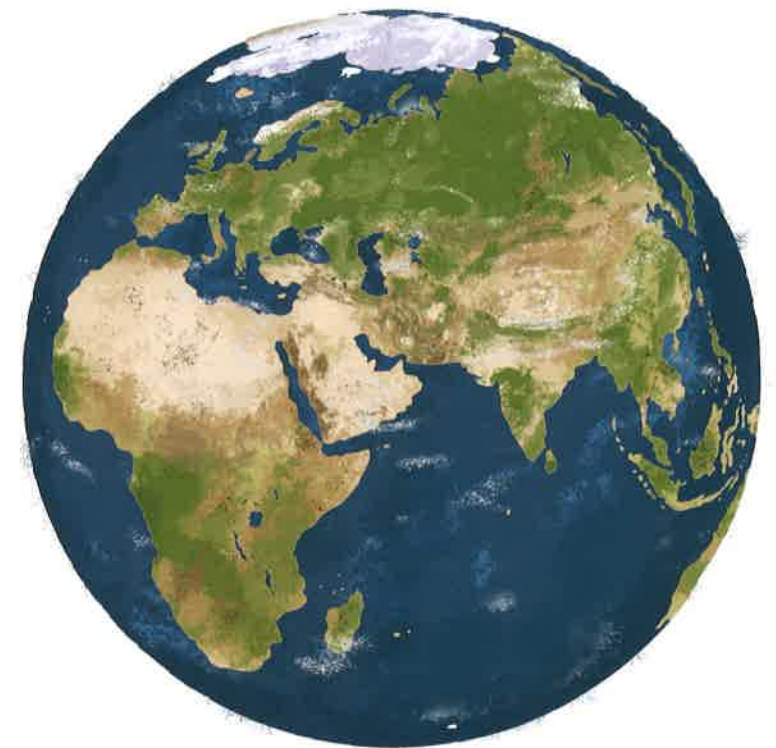
People use the internet to search for information, to work, to send emails, and to do their banking. They also shop online, share photos and news with friends, watch TV and films, and much more.

What do *you* use the internet for? Can you imagine life without the internet?









What's next?

More than half the people in the world—about 4,000,000,000—now use the internet. It was a great invention because it has all the information in the world. What will tomorrow's great invention be? Could you be tomorrow's great inventor?



Activities

The activities at the back of this book help you to practice the following skills:

-  Spelling and writing
-  Reading
-  Speaking
-  Listening*
-  Critical thinking
-  Preparation for the Cambridge Young Learners exams





- 1** Match the two parts of the sentences. Write the full sentences in your notebook.



- 1 An invention is something
- 2 An inventor is the person
- 3 Great inventions

- a can change the world!
- b that nobody has made before.
- c who makes it.

- 2** Read the information. Choose the correct names, and write them in your notebook.  



car



book






lamp

- 1 You can read this and find information in it.
- 2 It helps you to see things when it is dark.
- 3 You can drive it and go from place to place more quickly.

3 Listen to Chapter One. Answer the questions below in your notebook.    

- 1 Where and when were the oldest wheels in the world found?
- 2 What did the wheel make it easier to do?
- 3 What were the first journeys by wheel like?
- 4 What was much faster and much lighter?
- 5 How did tires help journeys?

4 Choose the correct words, and write the full sentences in your notebook.   



- | | | |
|--------------|-----------|-----------|
| 1 everywhere | somewhere | nowhere |
| 2 amazed | amazing | amazingly |
| 3 after | before | during |

- 1 Today, wheels are . . . —in our cars, our clocks, and our electric toothbrushes!
- 2 But, . . . , sailboats and musical instruments were invented *before* the wheel.
- 3 Scientists say people didn't have the tools that they needed to make a wheel . . . this.

5 Complete the text using the words in the box. Write the full text in your notebook.   

ago	best	Chinese
had to	real	shells
soon	trying	was

Imagine a world before paper ¹ . . . invented! People ² . . . write on big pieces of soft rock, wood, or ³ Many years ⁴ . . . , people in China began ⁵ . . . to make paper. A man called Ts'ai Lun found the ⁶ . . . way of making the first ⁷ . . . paper. People in other parts of the world ⁸ . . . began to copy ⁹ . . . paper-making.

6 Read Chapter Two. Are sentences 1—5 *True* or *False*? If there is not enough information, write *Doesn't say*. Write the answers in your notebook.  

- 1 The first paper was made from parts of plants and trees, and bits of old cloth!
- 2 No bank notes are made with cloth today.
- 3 To make paper, we use special trees which only grow in cold countries.
- 4 Making paper is good for the environment.

7 Read Chapter Three. Then, read the answers below, and write the questions in your notebook. 📖 ✎ ?

- 1 Johannes Gutenberg.
- 2 In around 1440.
- 3 You could put metal letters together into words.
- 4 Because it was much easier and quicker to make books.



8 In your notebook, write a news story about the first printing press. ✎ ?

PRINTING PRESS!

Johannes Gutenberg of Mainz, Germany, invented the first printing press.



9 Look at the picture and read the questions. Write the answers in your notebook. ✎ ?



- 1 Who usually gives us vaccines?
- 2 Which country had vaccines first?
- 3 Whose skin was used to make a vaccine?
- 4 How do vaccines work?

10 Choose the correct words, and write the full sentences in your notebook. 📖 ✎

- 1 Edward Jenner was an English doctor. In 1796, he **tested / was tested** the vaccine idea with a disease called smallpox and **wrote / was written** about it.
- 2 Because of his work, people in many countries **gave / were given** vaccines for smallpox.
- 3 Before 1796, smallpox **killed / was killed** millions of people.
- 4 When Jenner's vaccine **slowly introduced / was slowly introduced** all around the world, the disease **began / was began** to disappear.

- 11 Work with a friend. Talk about the two pictures. How are they different?  

a





b




In picture a, lots of people are speaking on their cell phones.

In picture b, only one person is speaking on the telephone.

- 12 Read the sentences. If a sentence is not correct, write the correct sentence in your notebook.  

- The first telephones had one part for your ear and another for your mouth.
- To make a call, you had to connect the telephone lines.
- The computer can make an electric signal from the sound of a voice.

- 13 Listen to the definitions. Write the correct word from Chapter Six in your notebook. 

- candle / filament / fire / light / lightbulb
- produce / connect / invent / make / start
- hot / dirty / dangerous / cheap / bright
- wire / telephone / gas / electricity / electric
- hair / beard / bamboo / cloth / tire

- 14 Write the sentences in the correct order.  

Edison used Japanese bamboo to burn as filaments in lightbulbs.

Edison used hair from a beard to make a filament!

Gas lights were used, but these were dangerous.

People used candles for light.

Thomas Edison invented the lightbulb.



15 Choose the correct answers, and write the full sentences in your notebook. 📖 ✍️

- The first modern . . . was called the Motorwagen.
 a airplane b bus
 c steam engine d car
- It was . . . by Karl Benz in Germany.
 a completed b learned
 c decided d found
- It had three . . . , and a new type of engine.
 a doors b drivers
 c wheels d windows
- Back then, it was difficult and . . . to get from place to place.
 a cheap b expensive
 c frightening d quick

16 Look at the three pictures. Write about this story in your notebook. ✍️ 🌟



Cars were first made in Germany . . .

17 Read the questions. Write full sentences in your notebook, using the words in the box. 📖 ✍️

12 seconds December 17th, 1903 37 meters
 beach Orville and Wilbur Wright short

- What was the first airplane flight like?
- When was the first flight?
- How far was the first flight?
- Where was the first flight?
- Who flew the first flight?
- How long were they in the air for?

18 Listen to Chapter Eight. In your notebook, describe how the Wright brothers built and flew their airplane. 🎧 ✍️



- 19 Write a letter from Ada Lovelace to Charles Babbage about their idea for a computer. ✍️ ?

*Dear Charles,
I've been thinking about our great idea today...*

- 20 You are Ada Lovelace. Ask and answer the questions with a friend, using the words in the box. 🗣️

draw plans personal computer
Charles Babbage 1830s

1 *What idea did you have?*

My idea was...

- 2 When did you start working on it?
3 Who were you working with?
4 How far did you get?

- 21 Read the text, and write all the text with the correct verbs in your notebook. 📖 ✍️

The internet is . . . (use) to send information very fast between computers all around the world.

It was first . . . (use) in 1969, in the USA. Like the computer, it was . . . (invent) by lots of different people. The internet that we . . . (use) today—also called the World Wide Web—was . . . (invent) by Tim Berners-Lee in 1990.

- 22 Look at the picture and write sentences about it, using *anyone*, *anybody*, *everyone*, *someone*, or *no one* in your notebook. ✍️ ?



1. *Someone is watching a film.*

Projects

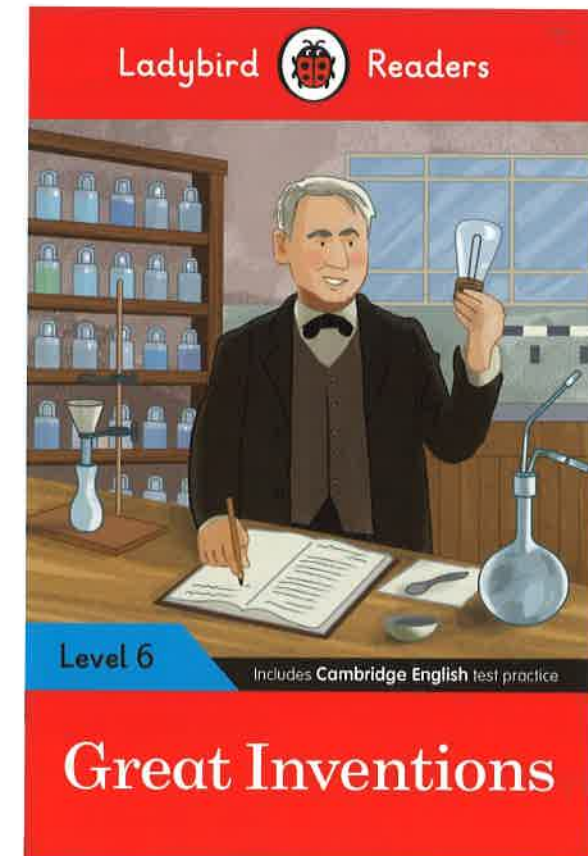
- 23 Look online, or in the library, and find out about another important invention.



Make a poster about the invention. Work in a group. Include the information below:

- What is the invention?
- Who was the inventor?
- Where was it invented?
- When was it invented?
- Why is it important?

- 24 Write a review of this book in your notebook. Did you like it? Why? / Why not?



In your review, include the following information:

- the invention you like the most
- the fact you like the most
- the picture you like the most

Glossary

airship (*noun*)

a large flying object with gas in it that you can travel in—it is lighter than air and has no wings

ancient (*adjective*)

very old

bamboo (*noun*)

a tall type of grass

cart (*noun*)

A *cart* has two wheels. You put things in it and push it, or a horse pulls it.

cloth (*noun*)

Clothes are made of *cloth*.

company (*noun*)

A *company* makes or sells things, and then people pay the *company* for them.

connect (*verb*)

to join things together

disease (*noun*)

When someone is very ill, they have a *disease*.

electric (*adjective*)

using *electricity*

electricity (*noun*)

Electricity makes *electrical* things work, like televisions, lights, etc.

engine (*noun*)

the part of a car, plane or boat that makes it move

flight (*noun*)

a journey by air

ink (*noun*)

This is in pens. It is used for writing or drawing.

machine (*noun*)

a *machine* does work for people

model (*noun*)

a copy of something, which is usually smaller than the real thing

modern (*adjective*)

from our time

personal computer

(*noun*)

a computer that one person uses

print (*verb*)

to produce letters, etc., with a *machine*, using *ink*

recycle (*verb*)

to use plastic, paper and glass again

scientist (*noun*)

a person who learns about the world and how things work

signal (*noun*)

an *electrical* or radio wave that is sent to a radio or television to make a sound or deliver information, etc.

steam engine (*noun*)

an *engine* that uses fire and water—the first trains had *steam engines*

tool (*noun*)

something you use with your hands to make or repair something

wind tunnel (*noun*)

a *machine* that makes wind go through a small area

wire (*noun*)

a long, thin piece of metal

