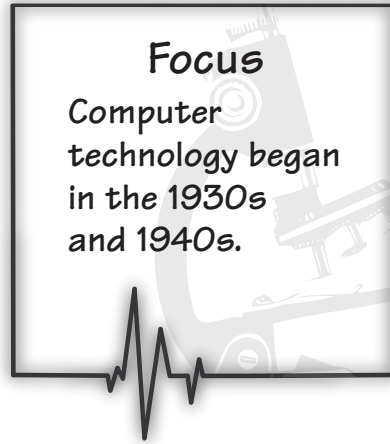
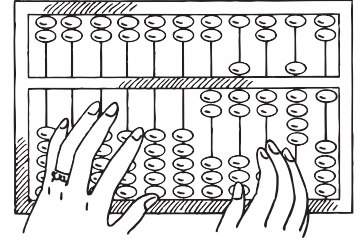


# Technology *(cont.)*

## Brief #2: Computers and Robots



It is probably hard to imagine a world without computers, but not that long ago that is how the world was. Nowadays, computers are used in almost every area of our lives: agriculture, education, entertainment, exploration, and medicine.



*abacus*

Some say the world's first "computer" was invented thousands of years ago. It is called an abacus. An abacus is often made of a bamboo frame, and it contains many beads strung on wires. This ancient tool is often called the world's first computer because it was a technology that helped people to perform calculations.



### Electronic Computer Technology

As early as the first part of the 20th century, scientists attempted to develop a technology that could perform complex mathematical calculations.

The first electronic computers were gigantic. They took up whole rooms and weighed thousands of pounds. They were not very practical. The first computer that was used commercially was called UNIVAC. UNIVAC stood for Universal Automatic Computer. It was built in 1951. The computer was 25 feet by 50 feet in length. It contained over 5,000 tubes. This enormous first computer could only store 1,000 words!

An important invention in the 1950s revolutionized computer technology and made it much more practical. This invention ultimately made it possible for people to hold computers in their hands. It is called the microchip. **A microchip is a tiny integrated circuit that can process information very quickly.** The circuits on a microchip are so small, they are microscopic.

### Vocabulary

1. microchip

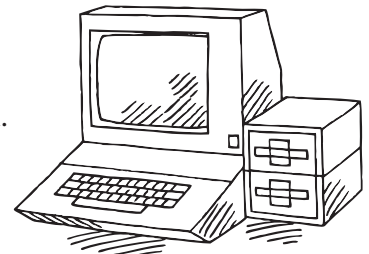


### Personal Computers

In the late 1970s, personal computers were introduced into the marketplace. These computers were small enough and easy enough to use that they became practical for people to own in their homes.

In the early 1980s, computers became even more practical with the introduction of laptop computers. These were smaller and more portable, allowing the user to carry these devices with them. When they were first introduced, however, these computers were very expensive.

Since then, the technology behind personal computers has advanced at such a rate that incredibly powerful computers that fit in the palm of the user's hand have become increasingly affordable.



# Technology *(cont.)*

## Brief #2: Computers and Robots *(cont.)*



### World Wide Web

In the 1960s, '70s, and '80s, computers were used to store information and to solve complex problems very quickly. But it wasn't until the 1990s that computers would transform global communications.

In the 1980s, there was an English scientist named Timothy Berners-Lee who was trying to figure out a way to communicate more efficiently with his colleagues. **He developed the communications system that would come to be called the World Wide Web, or the Internet.**

The Internet has made it possible for people globally to share information with one another in a matter of seconds. It has made it easy to find information and to learn new things. But just like with many new technologies, the Internet has had some negative unintended consequences.

One of these consequences is that there is a lot of misinformation on the Internet. And because communication is almost instantaneous, that misinformation can spread far and wide in a matter of minutes.

Other problems with the Internet involve cybercrime. Identity theft, fraud, and computer hacking to spread viruses are all major problems with the Internet. The Internet has also been used as a tool by some adults to prey on children.

### Vocabulary

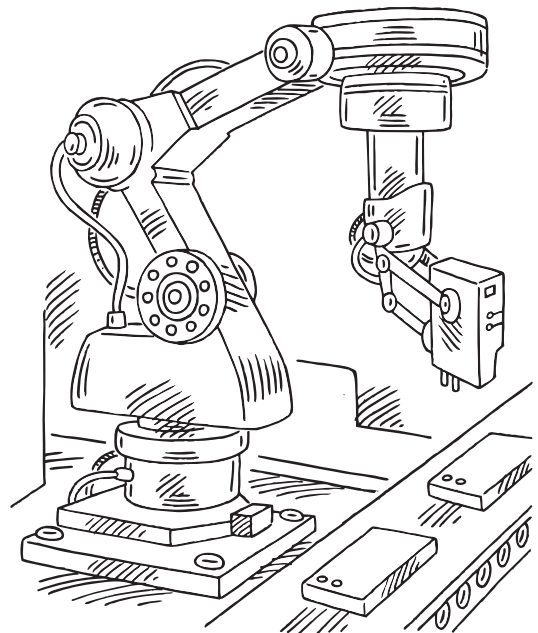
2. World Wide Web
3. robots
4. robotics
5. industrial robot
6. remotely operated vehicle (ROV)
7. autonomous robot



### Robots

When you think of a robot you may think of your favorite science fiction movie. But robots are real and because of computer technology, they perform many specialized jobs for people.

**A robot is a machine that can collect information from its environment and perform work.** For example, a robot may be used on an automotive assembly line to perform a particular task, like turning a screw into a nut. Robots run by using computer technology, including microchips and processors. As computer technology has advanced, so has robotics. **Robotics is the study, design, and manufacture of robots.**



# Technology *(cont.)*

## Brief #2: Computers and Robots *(cont.)*



### Medicine

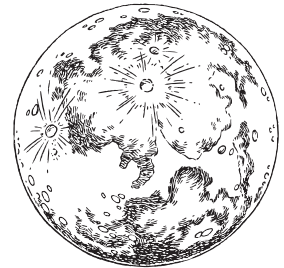
Robots are often used in the field of medicine. They are used to transport medicine and supplies from one area of a hospital to another. Robots are often used to help doctors when they perform surgery. Robotic hands, which are controlled by a surgeon, can perform certain operations that are very delicate and require the kind of precision that a human hand cannot provide.



### Industry and Exploration

**An industrial robot is a robot that can do many different tasks at the same time.** Most industrial robots work in factories. Many of these types of robots do work that was once performed by people. Industrial robots lift, carry, weld, paint, pack, and assemble.

**A robot called a *remotely operated vehicle (ROV)*, sometimes called a *rover*, is often used in space exploration.** NASA has sent several of these types of robots or rovers to Mars. Robots are often used to perform work that is too dangerous for people or to go to places where people cannot go. A ROV is actually controlled by a human being back on Earth. The robot and the person send signals back and forth to each other. The human decides where the rover will go and how fast it can move.



An autonomous robot is also used in space exploration. **An autonomous robot is a robot that can perform tasks without human guidance.** These robots can make decisions about where to go and how fast to move. They are equipped with sensors that can gather information about atmosphere, temperature, etc. They have cameras that can record information visually.

