The Mighty Semiconductor and the Rise of Silicon Valley

By ReadWorks

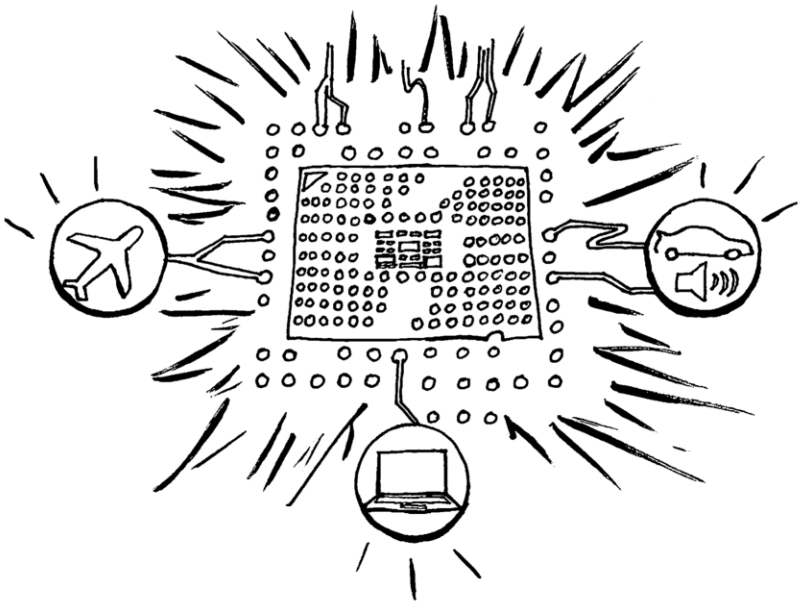

Illustration by Nishan Patel

For thousands of years, people lived in a world without computers. There were no video games and no smartphones. Now computers are part of the daily life of many people, and it's hard to imagine a world without them.

What is it that makes a computer work? Inside every computer is a tiny circuit called a semiconductor. Often, a semiconductor is essentially a couple wires attached to a piece of silicon (a mineral like quartz). Though semiconductors are very small, they are important. Semiconductors are what make many electronics work, from car radios to the systems that pilots use to fly airplanes. For a computer to work, it needs electricity. Semiconductors carry the electric signals in computers.

In the United States, almost all semiconductors are made in a place called Silicon Valley. Silicon Valley is just outside of San Francisco and is home to some of the country's smartest scientists. The history of Silicon Valley is tied to the history of the semiconductor.

The first mass-produced semiconductor was designed in the 1950s in Silicon Valley by a company called Fairchild Semiconductor. The engineers at Fairchild were interested in finding ways to make machines faster and smaller. Before Fairchild, people knew how to make semiconductors, but they didn't know how to make large batches of them.

In those early years, Robert Noyce was the boss at Fairchild. He was in charge of making sure the company built cutting-edge products the world had never seen before. Robert wanted his company to be a community where everyone was equal. At Fairchild, an engineer could rise to the top quickly, as long as he or she had a good idea. Everyone pitched in to help with problems, and everyone celebrated when a problem was solved.

Engineers loved working at Fairchild, and the company grew quickly. NASA needed semiconductors for the computers in their new spaceships. The United States Department of Defense needed semiconductors for planes and other military vehicles. Computer systems were being put into all kinds of devices, and every single computer needed semiconductors.

Soon engineers at Fairchild began quitting. They had exciting ideas and wanted to start their own companies. More than 50 other semiconductor companies were started by former employees at Fairchild. Most of these companies stayed in Silicon Valley. Soon it made sense for other high-tech companies to move to Silicon Valley, since there were already so many talented engineers in the area. In the 1970s the area began to be called "Silicon Valley," after the mineral that was the backbone of the semiconductor.

As computers spread throughout the country, Silicon Valley grew along with the industry. Soon it wasn't just semiconductor companies. There were companies that made personal computers, printers, software… the list went on and on. Apple, the maker of the first personal computer, had headquarters close to Silicon Valley. Years later, Google's headquarters were set in Mountain View, in the exact same city as Fairchild Semiconductor's first building.

Companies like Apple and Google have been attracting thousands of engineers from all over the world, making Silicon Valley a wealthy and thriving area. Investors have also followed engineers to Silicon Valley looking for promising companies with big futures. These new investors—known as venture capital firms—give a company the money it needs to start a business. Then if the company becomes big, a large chunk of the money it makes goes back to the investors.

But it isn't just the money that draws workers to Silicon Valley—it's also the opportunity. In Silicon Valley, there are new companies being created every week. There is money to invest in new companies. Silicon Valley has become a new global center of technology.

As of 2013, Silicon Valley is home to more than 3 million people. Many of them came from other countries, and in over half of the homes in Silicon Valley, families speak another language besides English. Both immigrants from other countries and people who move to Silicon Valley from other parts of the United States bring new ideas to Silicon Valley. Soon these people may

start their own companies, and those new companies may attract more engineers from other parts of the world. And so, Silicon Valley will continue to grow.

Name: _____ **Date:** _____

1. What is a semiconductor?

A) a tiny circuit inside every computer
B) a company that builds cutting-edge products
C) an area just outside of San Francisco
D) a mineral that is similar to quartz

2. What is a sequence of events described by the text?

A) the need for semiconductors grows; the first mass-produced semiconductor is designed in Silicon Valley; Silicon Valley grows
B) the first mass-produced semiconductor is designed in Silicon Valley; the need for semiconductors grows; Silicon Valley grows
C) the need for semiconductors grows; Silicon Valley grows; the first mass-produced semiconductor is designed in Silicon Valley
D) Silicon Valley grows; the need for semiconductors grows; the first mass-produced semiconductor is designed in Silicon Valley

3. Read these sentences from the text.

"In those early years, Robert Noyce was the boss at Fairchild. He was in charge of making sure the company built cutting-edge products the world had never seen before. Robert wanted his company to be a community where everyone was equal. At Fairchild, an engineer could rise to the top quickly, as long as he or she had a good idea. Everyone pitched in to help with problems, and everyone celebrated when a problem was solved.

"Engineers loved working at Fairchild, and the company grew quickly."

Based on this evidence, why might engineers have loved working at Fairchild?

A) They were paid better than engineers working at other companies.
B) They liked working at a company where they had a boss who was always telling them what to do.
C) They got along well with Robert Noyce, even when they disagreed with him.
D) They liked working together to solve problems and being promoted quickly.

4. Based on the information in the text, what were early computers often used for?

A) word processing and creating spreadsheets
B) operating spaceships and military vehicles
C) playing games and browsing the Internet
D) storing personal information and printing high-quality pictures

5. What is the main idea of this text?

A) Companies like Apple and Google attract thousands of engineers from all over the world.

B) Semiconductors are what make computers work, and their production led to the rise of Silicon Valley.

C) As of 2013, Silicon Valley was home to more than 3 million people, and many of them had moved there from other countries.

D) A semiconductor is made up of a couple wires attached to a piece of silicon (a mineral like quartz).

6. Read these sentences from the text.

"As computers spread throughout the country, Silicon Valley grew along with the industry. Soon it wasn't just semiconductor companies. There were companies that made personal computers, printers, software… the list went on and on."

What does the author mean by writing that "... the list went on and on"?

A) Long lists are easier to make on a personal computer than on a piece of paper.

B) There were many other products made by companies in Silicon Valley.

C) There is a long list in Silicon Valley that contains the names of all the companies there.

D) Semiconductors, computers, printers, and software were the only products made by companies in Silicon Valley.

7. Read this sentence from the text.

"But it isn't just the money that draws workers to Silicon Valley—it's also the opportunity."

How could this sentence be broken up without changing its meaning?

A) It isn't just the money that draws workers to Silicon Valley, instead. It's also the opportunity.

B) It isn't just the money that draws workers to Silicon Valley, earlier. It's also the opportunity.

C) It isn't just the money that draws workers to Silicon Valley, for example. It's also the opportunity.

D) It isn't just the money that draws workers to Silicon Valley, though. It's also the opportunity.

8. What is Silicon Valley?

9. Why did many "high-tech companies" move to Silicon Valley?

10. Explain whether there is a connection between the semiconductor and the rise, or growth, of Silicon Valley. Support your answer with evidence from the text.