

## Weekly Concept Inventions



### Essential Question

How does technology lead to creative ideas?



*Go Digital!*



# Strokes of Genius

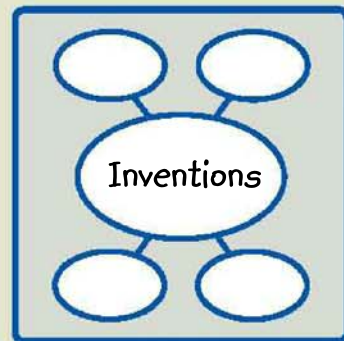
Computers were first invented to help us process information. Then artists envisioned a way to draw using computers!

- ▶ Using a special “pen” and “pad,” I make my artistic ideas come to life on the screen in front of me.
- ▶ I can also animate my drawings on the computer. It makes me wonder what the next breakthrough in making art will be!

## Talk About It



Write words you have learned about inventions. Then talk about an invention you like, and what it allows you to do.



# Vocabulary

Use the picture and the sentences to talk with a partner about each word.

## breakthrough



Sam had been trying to think of a project idea when he finally had a **breakthrough**.

What kind of *breakthrough* would you like to see?

## captivated



Josh was **captivated** by the action movie in 3-D.

What is something that has *captivated* you?

## claimed



After her flight landed, Marika happily **claimed** her suitcase.

What is something you *claimed* that was yours?

## devices



Many people use electronic **devices** every day to tell time, read, and communicate.

What *devices* do you use?



## enthusiastically

Fans cheered **enthusiastically** when their team won.

What events make you react enthusiastically?



## envisioned

As Sara stared at the map, she **envisioned** traveling all over the world.

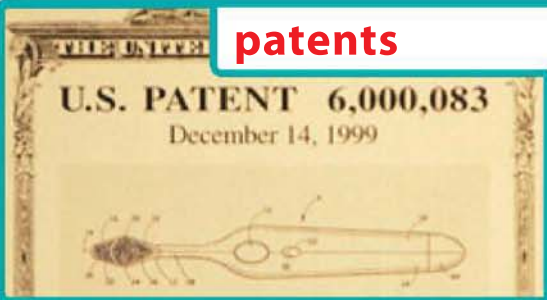
Tell about something you have envisioned.



## passionate

Cal is **passionate** about protecting all animals from harm.

Describe a person who is passionate about something.



## patents

Inventors who have **patents** for their inventions can make money from them.

What inventions do you think have patents?

## Your Turn

COLLABORATE



Pick three words. Write three questions for your partner to answer.

**Go Digital!** Use the online visual glossary

# Fantasy

## Becomes Fact



### Essential Question

**How does technology lead to creative ideas?**

Read about how a science fiction writer's ideas led to new technology.

## Inventing the Future

Have you ever imagined ways of traveling into space? Or have you used a tool and wished it did something more? One person who thought just this way was the science fiction writer Arthur C. Clarke. Arthur is most famous for writing novels and stories about science and the future. But you may not know that real inventions came about as a result of things he first imagined!

In his writings, Arthur **envisioned** technologies that did not yet exist, but might. This was no accident. Arthur studied and used scientific knowledge all during his lifetime. Arthur wrote about advanced computers and spaceships. Years later, these technologies were developed.



Arthur C. Clarke's interest in science and space exploration lasted all his life. He sometimes constructed his own tools for his research.

## Science at an Early Age

Even as a child, Arthur was **passionate** about science. Born in England in 1917 in a small town by the sea, Arthur spent his school years **enthusiastically** reading his favorite science fiction magazine. He was fascinated by astronomy and built a telescope when he was just 13. He also started writing his own science fiction stories. He even published them in a school magazine. Arthur loved imagining the future.

Arthur's own future became uncertain as a teenager, when his father died. Since his mother could not afford to send him to college, Arthur moved to London at the age of 19 and got an office job. In his free time, he worked at the subjects he loved. He also continued to write science fiction. His love of science and its possibilities would soon be useful.

## Predicting the Future

In 1939 Arthur joined the Royal Air Force to help fight the Second World War. It was there that Arthur began to invent. Arthur became an expert in the radar systems used to guide planes and detect enemies. This technology gave Arthur ideas. He imagined an amazing breakthrough in communication systems. He proposed a wireless system using space stations. This system required rockets to carry satellites into space. Then the satellites would help transmit signals around the Earth. Since satellites and space stations did not exist, this idea was a **demonstration** of Arthur's imagination. He had learned much about space.

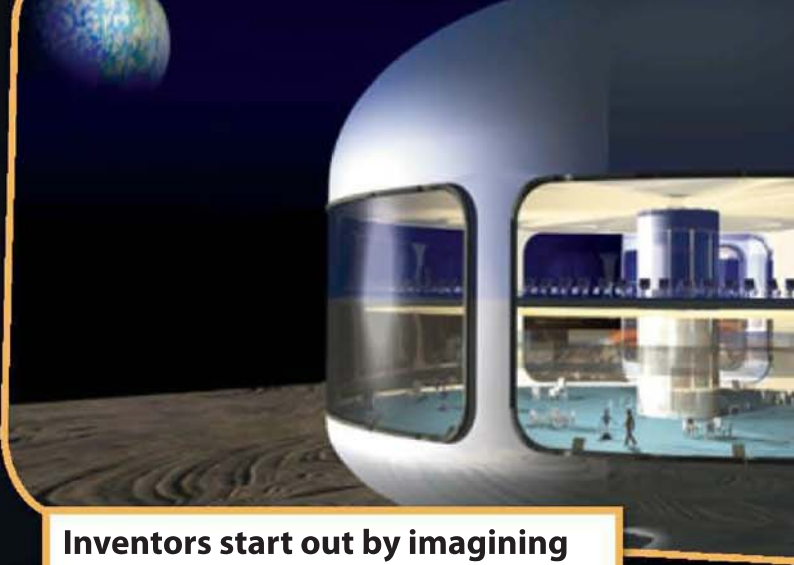
As with any inventor, Arthur built on technologies that already existed to create his system. For example, rockets had been invented but could not yet travel into space. In 1957, Russia used a rocket to launch *Sputnik 1*, which became the first manmade object to orbit Earth. In the 1960s, a satellite communications system was created. It was just like the one Arthur had envisioned years before. Years later, the same kind of satellite was used to make cell phone communication possible. Although Arthur **claimed** the communications system as his own idea, he did not apply for **patents**. As a result, he never made money from his idea.

A satellite in space, featuring a long, segmented antenna array extending from its main body. The satellite is positioned against the backdrop of Earth's blue and white atmosphere. The main body of the satellite is yellow and black, with various instruments and a large black circular component visible.

Satellites like this one began with the launch of *Sputnik 1*, which weighed less than 200 pounds and was only about 23 inches in diameter.

## Can Science Fiction Come True?

In 1968, Arthur published one of his best-known novels, *2001: A Space Odyssey*. In the novel, Arthur imagined a computer that controlled almost everything. Arthur's computer idea, HAL, could actually think for itself. Today, computers cannot think for themselves. However, they do control many of the **devices** in our homes, cars, planes, and spacecraft. HAL could recognize human voices as well as speak back. This technology did not exist when the book was written, but it is common today. Arthur's novel also predicted advances such as space stations and rocket-powered missions to far-off



Inventors start out by imagining what the future will look like.

planets. He even predicted people reading news on electronic screens!

Arthur C. Clarke's science fiction books have **captivated** readers around the world. Many of the technologies he wrote about seemed like fantasy at the time, but they turned into fact. His creative ideas may have inspired others to invent the very technologies he imagined.

### Make Connections



Talk about how existing technology helped Arthur C. Clarke imagine other inventions.

#### ESSENTIAL QUESTION

What are some ways you would like to improve a machine or other object that you use in your everyday life? **TEXT TO SELF**

