Science and Exploration

If YOU lived there...
You are an adviser to a European king in the 1500s. The rulers of several other countries have sent explorers to search for new trade routes. Your king does not want to fall behind. Now a young sea captain has come to the royal court with a daring plan. The king is interested, but funding such a voyage could be costly.

What will you advise the king to do?

BUILDING BACKGROUND The Renaissance made Europeans more curious about science and the world. This curiosity led to new inventions and technologies that helped people explore the world. As a result, a spirit of adventure swept across Europe.

The Scientific Revolution
Can you imagine what your life would be like without science? Think of all the things that science has provided in our daily lives. Without it, we would have no electricity, no automobiles, no plastic. Our lives would be totally different.

Scientific Advances and Exploration
Several inventions and technical advances enabled people to explore the world and to study the heavens.

Analyzing Visuals Why do you think these inventions and advances contributed to increased exploration of the world?

Astrolabe With an astrolabe, sailors could use the stars to calculate a ship's exact location.
Did you know that there was a time when people lived without the benefits of modern science? In fact, it was not until the 1500s and 1600s that most people in Europe began to appreciate what science and technology could do to improve life.

A New View of Science

Before the 1500s, most educated people who studied the world relied on authorities such as ancient Greek writers and church officials. People thought these authorities could tell them all they needed to know. Europeans had little need for science.

Between about 1540 and 1700, though, European views about how to study the world changed. This widespread change in views was part of the **Scientific Revolution**, the series of events that led to the birth of modern science. People began placing more importance on what they observed and less on what they were told. They used their observations to come up with logical explanations for how the world worked. This new focus on observation marked the start of modern science.

Why is the birth of modern science called a revolution? The new approach to science was a radical idea. In the same way a political revolution changes a country, this new view of science changed society.

**Science and Religion**

Not everyone was happy with the new role of science in society. Some people feared that scientific ideas would eventually lead to the breakdown of European society.

Many of the people who most feared the increasing influence of science were church officials. They tended to oppose science when it went against the teachings of the church. For example, the church taught that Earth was at the center of the universe. Some scientists, though, had observed through telescopes that Earth orbited the sun. This observation went against the church's teaching.

This growing tension between religion and science came to a head in 1632. That year, an Italian scientist named Galileo (gal-uh-LEE-oh) published a book in which he stated that Earth orbited the sun. He was arrested and put on trial. Afraid that the church would expel him, Galileo publicly stated that his writings were wrong. Privately, though, he held to his beliefs.

Despite conflicts such as these, science and religion were able to exist together in Europe. In fact, many scientists saw a connection between science and religion. These scientists believed that science could better explain church teachings. Science continued developing rapidly as a result.

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**Compass** The compass, which always points north, helped sailors find their way at sea.

**Telescope** With the telescope, scientists could study the heavens like never before.
Discoveries and Inventions

The Scientific Revolution was a period of great advances in many fields of science. With increased interest in science came discoveries in astronomy, biology, physics, and other fields. For example, astronomers discovered how the stars and the planets move in the sky. Biologists learned how blood circulates throughout the human body. Physicists figured out how mirrors and pendulums worked.

Some of the greatest advances of the Scientific Revolution were made by one man, Sir Isaac Newton. He made exciting contributions to both math and physics. Newton is probably best known today for his observations about gravity, the force that attracts objects to each other. Before his observations, scientists knew very little about how gravity works.

Many of the discoveries of the Scientific Revolution were possible because of new inventions. Devices such as the telescope, the microscope, and the thermometer were invented at this time. Some of these new inventions helped contribute to another exciting time—the Age of Exploration.

**Reading Check** Summarizing What happened during the Scientific Revolution?
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**Summary:**