How was a college student inspired to change the future of science?

Nicolaus Copernicus seemed destined to become an astronomer. He began his studies in Poland, where he studied many subjects, including astronomy. At that time, astronomy courses taught little more than methods of calculating the dates of holy days. But for Copernicus, the course ignited a passion for astronomy.

However, his uncle Lucas, a bishop, wanted Copernicus to have a church career. He soon sent Copernicus to the university in Bologna, Italy, to study church law. Copernicus rented a room from an astronomy professor and assisted with his research. In 1497 Copernicus observed the moon eclipse the sun. As a result, his excitement for astronomy continued to grow.

Copernicus eventually made a living as a doctor, but his first love was always astronomy. Throughout his life Copernicus carefully observed the heavens, made calculations, and developed a mathematical formula that proved the earth rotated around the sun. The world of science would never be the same.

The Scientific Revolution

1. Teach Ask students the Reading Focus questions to teach this section.
2. Apply Draw four rectangles for students to see. Label them with the names of the four topics in this section: Dawn of Modern Science; Discoveries in Astronomy, Physics, and Math; Discoveries in Biology and Chemistry, and Science and Society. Have students copy the rectangles onto their papers and fill them in with discoveries, names of key scientists, and other important details.
3. Review As you review the section, have students describe how scientific discoveries changed the way people viewed the world.
4. Practice/Homework Have students write a research proposal from the point of view of Galileo, Newton, or Vesalius. 

The Astronomer Copernicus: Conversation With God

In the late 1400s astronomer Nicolaus Copernicus proved the earth rotated around the sun. 

How did scientific ideas move beyond the realm of science and affect society?

Teach the Main Idea

The Scientific Revolution

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The Inside Story

How was a college student inspired to change the future of science?

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Destined to Study the Stars

In the late 1400s astronomer Nicolaus Copernicus proved the earth rotated around the sun.

The Astronomer Copernicus: Conversation With God

In the late 1400s astronomer Nicolaus Copernicus proved the earth rotated around the sun.
Dawn of Modern Science

When some scholars in the Middle Ages had questions about the natural world, they sought answers from traditional authorities—the church and ancient scholars. In the mid-1500s, however, scholars began to challenge tradition as they began to think in new ways.

The Old View One example of how scholars relied on traditional authorities was in their beliefs about the structure of the universe. People believed that the earth was the center of the universe and that the sun, moon, and planets revolved around the earth. This viewpoint was called the geocentric theory.

The Greek philosopher Aristotle proposed the geocentric theory in the 300s BC. The Greek astronomer Ptolemy expanded upon Aristotle’s ideas in the AD 200s. These ideas were upheld by the church, which taught that God put the earth at the center of the universe. For centuries, scholars and the church were the accepted authorities for European intellectuals.

New Viewpoints In the Middle Ages, scholars in Europe learned about scientific advances in the Arab world. By the mid-1500s, they began to challenge traditional authorities.

They posed theories about the natural world and developed procedures to test those ideas. Historians have called this new way of thinking the Scientific Revolution.

Why were Europeans open to new ideas at this time? One reason was exploration. When explorers journeyed to Africa, Asia, and the Americas, they found people and animals they had never seen before. The ancient scholars could provide no information about these new lands. Perhaps there were other things to be discovered that the ancients had not known.

The Age of Exploration also led scientists to study the natural world more closely. Navigators, for example, needed more accurate instruments and geographic knowledge to help find their way across vast oceans. The more that scientists examined the natural world, however, the more they found that it did not match ancient beliefs.

The Scientific Method Scientists eventually developed a new approach to investigation and discovery called the scientific method. The scientific method consists of five basic steps. First, scientists identify a problem. Next, they form a hypothesis that can be tested. They then perform experiments to test the hypothesis.

The Science of Cells

Since the Scientific Revolution, scientists have continued to use the scientific method to make remarkable discoveries. Mary Osborn, a cell biologist in Göttingen, Germany, researches cytoskeletons, or the structures that form the skeleton of cells. In the 1970s she focused her research on microtubules, tiny tubes that move important substances throughout cells. She developed a new microscopic technique that allowed her to see that microtubules form continuous lines that snake through cells.

One of her colleagues in the scientific community, however, dismissed her findings as false. At that time, biologists used electron microscopes to study cells. Electron microscopes required scientists to slice cells very thinly to view them. For this reason, biologists had never seen microtubules intact.

Mary Osborn’s microscopic technique allowed biologists to see whole cells for the first time. Scientists now use her technique widely, most notably for improved cancer diagnoses. More reliable diagnoses allow doctors to treat cancer patients more effectively than ever before.

Analyze How did Osborn’s technique allow scientists to see cells in an entirely new way?

Mary Osborn in her laboratory in Göttingen, Germany ➤

Info to Know

Scientists or Philosophers? During the 1600s, those who investigated nature were not referred to as scientists. Instead, they were called “natural philosophers.” Their tools were referred to as “philosophical instruments.” Mathematicians were usually called “geometers” after the most advanced branch of math at the time.

Primary Source

“The truth is the science of Nature has been already too long made only a work of the brain and the fancy: It is now high time that it should return to the plainness and soundness of observations on material and obvious things.”
—Robert Hooke, Micrographia, 1665

Differentiating Instruction

Special Education Students

Materials: poster paper, current science and technology magazines, scissors, glue

1. Review with students the idea that the foundations of modern science were built during the Scientific Revolution.

2. Organize students into mixed-ability pairs.

3. Have students search current magazines for images of things made possible by modern science, particularly in the realm of astronomy, math, physics, biology, and chemistry. Possible images could include machines and people engaged in scientific study.

4. Have students create a collage with images they find. Display collages for students to see.

Visual-Spatial

Alternative Assessment Handbook, Rubric 8: Collages

Answers

Linking to Today It allowed biologists to see whole cells for the first time.
They record the results of the experiments. Finally, they analyze the results of the experiments to form a conclusion that either proves or disproves the hypothesis.

Two of the most important scholars who helped develop the scientific method were Francis Bacon and René Descartes. In England, Francis Bacon wrote in 1620 that the only true way to gain scientific knowledge was through experimentation—observing, measuring, explaining, and verifying. In France, meanwhile, René Descartes placed more emphasis on reason. He believed that everything should be doubted until it could be proven by reason. Descartes relied on mathematics and logic to prove basic truths.

The ideas of Bacon and Descartes continue to influence modern scientific methods. Scientists today use observation and experimentation along with mathematical logic to achieve a deeper understanding of the natural world.

**Reading Check** Find the Main Idea What was the Scientific Revolution?

Discoveries in Astronomy, Physics, and Math

Early scientists made significant contributions in astronomy, physics, and math. Their work began to explain the complexities of the solar system and the limits of the physical world.

**Copernicus** In the early 1500s, Polish astronomer Nicolaus Copernicus recognized that the geocentric theory did not explain the movements of the sun, moon, and planets accurately. After years of careful observation, he came to the conclusion that the sun, not the earth, was near the center of the solar system. Copernicus’s displacement of the earth revolves around the sun is called the heliocentric theory.

The idea that the earth orbits the sun was not completely new. But Copernicus developed a detailed mathematical explanation of how the process worked. In addition, Copernicus was the first scientist to create a complete model of the solar system that combined physics, astronomy, and mathematics. Copernicus did not publish his conclusions in his most famous book, On the Revolution of the Heavenly Spheres, until the last year of his life. He knew the church would oppose his work because his work contradicted the teachings of the church. He was also concerned about the weaknesses of his theory. His mathematical formulas did not predict the positions of the planets very well, and Copernicus did not want to face ridicule for these weaknesses.

Copernicus died in 1543, shortly after his revolutionary work was published. Other scientists would further develop and expand upon Copernicus’s ideas.

**Brahe and Kepler** One of those scientists was Tycho Brahe (bräh), a Danish astronomer. When a bright object appeared in the sky over Denmark in 1572, Brahe wrote a book proving that the object was a newly visible star that was far away. He called it a supernova, the name still used for distant exploding stars that suddenly become visible on earth.

Brahe’s book impressed King Frederick II of Denmark, who gave Brahe money to build two observatories. There, Brahe developed his own system to explain planetary movement. He believed that the sun revolved around the earth, but that the other five known planets in the solar system revolved around the sun.

Brahe later moved to Prague and hired a German mathematician named Johannes Kepler as his assistant. Brahe needed help to form a mathematical theory from the detailed measurements he had made of the planets. Finally, they analyze the results of the experiments to form a conclusion that either proves or disproves the hypothesis.

The Scientific Method

The Scientific Method is a set of techniques for acquiring new knowledge about the natural world based on observable, measurable evidence.

**Step 1** Identify a problem or a research question to be answered.

**Step 2** Form a hypothesis that can be tested. A hypothesis is a proposed answer to the research question and is based on previous knowledge.

**Step 3** Perform experiments to test the hypothesis.

**Step 4** Record the results of the experiments.

**Step 5** Analyze the results of the experiments to form a conclusion that either proves or disproves the hypothesis.

**Answers**

**Reading Check** a new way of thinking about the natural world that challenged traditional views and instead relied upon experimentation
Discoveries in Astronomy, Physics, and Math

**Identify** What valuable contribution did Kepler make? Proved that planets had elliptical orbits around the sun

**Make Inferences** Why were Galileo’s books so controversial? They contradicted the official Church viewpoint that the sun orbited Earth.

**Evaluate** What do you think was Newton’s most important discovery? Why? Possible answers—idea that planets and stars move according to predictable laws, expressed mathematically; new view of the universe

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**Misconception Alert**

Though it is often perceived that scientists rely purely on facts and data, early scientists had a good measure of what might be perceived as superstition. Girolamo Cardano, a doctor, natural philosopher, and mathematician, supposedly had the gift of prophecy and predicted the date of his own death. Isaac Newton studied alchemy and spent his time searching the Bible for clues about the end of the world.

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**Reading Check Answers**

WHAT MIGHT BE PERCEIVED AS SUPERSTITION EARLY SCIENTISTS HAD A GOOD MEASURE OF WHAT MIGHT BE PERCEIVED AS SUPERSTITION.

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**Skills Focus: Identifying Main Idea and Details**

**Reading Skill**

Astronomers and Their Achievements

1. Draw the graphic organizer for students to see. OMIT the italicized answers.

2. Have students copy and complete the graphic organizer. Then, have volunteers fill in the class graphic organizer. **Visual-Spatial**

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**Answers**

Reading Check Copernicus—all planets orbit the sun; Brahe—sun orbits Earth, other planets orbit sun

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After Brahe’s death, Johannes Kepler published the result of Brahe’s measurements of the orbit of Mars. These measurements led Kepler to solve the main problem of Copernican theory. Copernicus had assumed that the planets orbited the sun in a circle. Kepler found through the Mars measurements that this assumption was not true. He was the first astronomer to prove that the planets orbited the sun in an oval pattern, or ellipse.

Brahe had wanted to prove Copernicus wrong. Instead, his measurements led Kepler to prove that the heliocentric theory was right. Kepler’s mathematical model of the solar system was also correct.

Galileo Copernican theory was supported by Galileo Galilei, an Italian scientist. After learning about a sailor’s spyglass that allowed one to see distant objects, Galileo built the first telescope used for astronomy in 1609, which he used to scan the heavens.

Galileo was the first scientist to observe Saturn, the craters on the moon, sunspots, and the moons of Jupiter. He also discovered that the Milky Way was made up of stars. He described these amazing discoveries in 1610 in a book called Starry Messenger.

Sir Isaac Newton The English scientist Isaac Newton changed the world of science by bringing together astronomy, physics, and mathematics. As a young man, Newton wondered if gravity affected the universe the way that it affected objects on earth. Years later, his assistant wrote about Newton’s questioning.

**History’s Voices**

“Whist he was musing in a garden it came into his thought that the same power of gravity (which made an apple fall from the tree to the ground) must extend much farther than was usually thought—Why not as high as the Moon?”

—John Conduitt, Conduitt’s Account of Newton’s Life at Cambridge, 1727

In 1687 Newton published his greatest work, The Mathematical Principles of Natural Philosophy, also known as the Principia. In this book, he explained his law of universal gravitation. This law states that gravity affects objects in the universe as well as on earth. Just as gravity causes an apple to fall from a tree, gravity keeps the planets in their orbits.

From these findings, Newton developed a new kind of mathematics called calculus, which he used to predict the effects of gravity. Controversy soon erupted, however. The German philosopher Gottfried von Leibniz independently developed calculus at the same time. Leibniz and Newton accused each other of plagiarism and feuded for many years. Historians now believe that it was simply a case of independent discovery by two very talented men.

**Reading Check** Contrast How did Copernicus and Brahe differ in their views of the universe?
Discoveries in Biology and Chemistry

As astronomers moved away from the works of ancient Greeks, other scientists used the scientific method to acquire new knowledge. As a result, during the Scientific Revolution, scientists made great discoveries in the fields of biology and chemistry.

Biology In the Middle Ages, European doctors relied on the works of the ancient Greek physician Galen. But Galen's works were inaccurate. He had assumed that human anatomy was similar to that of animals, because he had never dissected a human body.

Andreas Vesalius, a Flemish doctor, became known for his work in anatomy at the University of Padua in Italy. In 1539 a judge learned of his work and made the bodies of executed criminals available to Vesalius for dissection. Vesalius hired artists to produce accurate drawings. He published his greatest work, De humani corporis fabrica, in 1543. Vesalius laid the groundwork for English physician William Harvey to observe and develop a magnifying lens to invent the microscope. He was the first person to describe the appearance of bacteria, red blood cells, yeast, and other microorganisms.

English physicist and inventor Robert Hooke used an early microscope to describe the appearance of plants at a microscopic level. In addition to his many achievements in physics and mathematics, Hooke is credited with creating the term cell.

Chemistry Robert Boyle is often called the father of modern chemistry. Boyle was the first chemist to define an element. His 1661 work, The Sceptical Chemist, described matter as a cluster of tiny particles (now called atoms or molecules). Boyle stated that changes in matter happened when these clusters were rearranged.

His most significant contribution to chemistry was Boyle's law, which describes how temperature, volume, and pressure affect gases.

French chemist Antoine-Laurent Lavoisier (lah-vah-ZEE-ay) developed methods for precise measurements in the 1700s. He discovered the law of Conservation of Mass, which proved that matter could not be created or destroyed. Lavoisier recognized and named oxygen, introduced the metric system of measurements, and invented the first periodic table, which included 35 elements.

Vesalius's work had an impact on the medical community. His discoveries helped doctors better understand the human body and its functions. Boyle's work laid the foundation for modern chemistry, and Lavoisier's contributions expanded our knowledge of the elements and the laws of matter.

Skills Focus: Making Oral Presentations

Reading Like a Historian Skill

1. Assign each student to a scientist of the Scientific Revolution.
2. Have students conduct research to gain additional information about their scientists. Have them prepare a brief presentation for a scientific conference. Presentations should include biographical information, but should mainly focus on the scientist's work. Students should include visuals in their presentations.
3. When students are ready to give their presentations, organize the class into three or four groups. Have students in the first group set up at different stations in the room and give their presentations as the other groups rotate through the stations.
4. Have the next group of students set up at the stations and repeat the process. [Kinesthetic]

Alternative Assessment Handbook, Rubrics 24: Oral Presentations; and 30: Research

Discoveries in Biology and Chemistry

Analyse How did Vesalius record information learned from his dissections? hired artists to produce accurate drawings of his procedures

Predict What impact do you think Vesalius’s work had on the medical community? possible answers—expanded knowledge of anatomy; made them realize anatomy’s importance

Summarize What were Lavoisier’s achievements? developed precise measuring techniques; first to prove Law of Conservation of Mass; described the role of oxygen in chemistry

Primary Source

“The Newtonian principle of gravitation is now more firmly established, on the basis of reason, than it would be were the government to step in, and to make it an article of necessary faith. Reason and experiment have been indulged, and error has fled before them.” —Thomas Jefferson, Notes on the State of Virginia, 1781-1785

Answers

Themes Through Time It allowed scientists to observe the universe and test hypotheses rather than accepting traditional views.

Reading Check importance of anatomy and dissection; function of blood and circulatory system; invention of microscope; discovery of certain laws of matter

Alternative Assessment Handbook, Rubrics 24: Oral Presentations; and 30: Research
Science and Society

Contrast: How did the basis of Christianity differ from the basis of science? Christianity was based on faith; science was based on the pursuit of knowledge.

Analyze: How did Renaissance artists combine science and religion? They studied anatomy, experimented with chemistry of paints and nature of light, used math to create balance; works dedicated to God

Science and Religion

Science and religion combined to produce artistic achievements of the Renaissance; scientists also challenged some of the traditional ideas of the Church.

Science and Society

As science began to assume greater significance in society, the question of the role of the Roman Catholic Church in changing culture became important. At this time the church opposed the views of many scientists, such as Galileo. However, the church benefited from the new scientific discoveries that made Renaissance art and architecture possible.

Science and the Church: As the most powerful institution in Europe during the Middle Ages, the church had also been the primary resource for knowledge and learning. The church had established cathedral schools, many of which became universities, to train people to run the church. How did scientists and their innovative views fit into the church’s established structure?

Most European scientists were Christian and did not want to challenge the role of Christianity in society. However, conflicts between the church and science developed. The church explained the world through inspiration and revealed truth. Early science sought to explain the world through the accumulation of facts and logical reasoning.

The early church rejected some of the beliefs of ancient Greek scholars because they were not Christians. Some leaders in the church also feared reason as an enemy of faith. But, the church leaders eventually became convinced that reason could be used to serve the needs of the church instead of undermining them. To a limited extent, the church began to embrace some of the achievements of the Scientific Revolution.

Galileo’s theories, however, brought him into direct conflict with the church. Church leaders pressured Galileo not to support the ideas of Copernicus. Still, Galileo continued his studies. In 1632 he published Dialogue concerning Two Chief World Systems. Although this book included the views of both Ptolemy and Copernicus, it clearly showed Galileo’s support of Copernican theory. Pope Urban VII angrily ordered Galileo to Rome to stand trial before the Inquisition—the church institution to stamp out heresy, or dissenting views. In April 1633 Galileo stood trial before the Inquisition. Galileo reluctantly stated that he would not use Copernican theory in his work so that he would receive a lenient sentence. The pope ordered Galileo placed under house arrest in his villa near Florence, where he spent the remainder of his life.

Science and Art: During the Renaissance, the study of art and architecture were not separate from the study of science. Artists learned human anatomy so they could paint the body.
Artists experimented with the chemistry of paints and the nature of light. Painters used mathematics to create compositions of perfect balance. The use of mathematics and physics were crucial to the great architecture and engineering achievements of the time.

Science and religion thus combined to produce the great artistic achievements of the Renaissance. Much of the great art and architecture of the Renaissance was dedicated to the glory of God and would have been impossible without reason and science. But the artists and architects had not challenged a basic belief of the church. Rather, astronomers such as Galileo did.

**Science and Community** The Scientific Revolution had firmly established a new way of thinking about the physical world. Great advances had been made in the disciplines of astronomy, physics, biology, and chemistry. In turn, those advances had influenced developments in the arts and architecture. As the Scientific Revolution spread, its impact would reach far beyond the laboratories and observatories of scientists.

Soon, philosophers and scholars would seek new understandings about society. They would reexamine old ideas on government, religion, education, and economics. They would also wonder if reason could solve the age-old problems of poverty, war, and ignorance. The new ways of thinking that emerged from the Scientific Revolution would lead to even more dramatic changes, as you will read about in the next section.

**Drawing Conclusions** How did the Scientific Revolution have an impact beyond the realm of science?

### Section 1 Assessment Answers

1. **a. Define** What was the geocentric theory of the universe?  
   - Possible answer: The earth was at the center of the universe.
2. **b. Analyze** How did the scientific method change the way people learned about the natural world?  
   - Possible answer: People learned about the relationships between objects in the natural world through experimentation and observation.
3. **c. Evaluate** What effect would the scientific method have on art and architecture?  
   - Possible answer: The use of mathematics and physics would have a significant impact on art and architecture.
4. **a. Describe** What effects did the Scientific Revolution have on art and architecture?  
   - Possible answer: The Scientific Revolution led to new ideas about the natural world, which influenced the arts.

### Critical Thinking

5. **Identify Cause and Effect** Copy the graphic organizer below and use it to list the causes and the effects of new discoveries made during the Scientific Revolution.

<table>
<thead>
<tr>
<th>Causes</th>
<th>New Discoveries</th>
<th>Effects</th>
</tr>
</thead>
</table>

6. **Persuasion** Suppose that you are an astronomer during the mid-1500s. Write a short speech explaining why the scientific method would reveal truth more accurately than reliance upon traditional authorities.

### Focus on Writing

### Conclusion

Have students describe the changes in ideas brought about by the Scientific Revolution.
Getting Started

Use the Interactive Reader and Study Guide to familiarize students with the section content.

**Interactive Reader and Study Guide, Section 2**

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**Academic Vocabulary**

Review with students the high-use academic term in this section.

**rational** having reason or understanding (p. 178)

**CRF:** Vocabulary Builder: Section 2

Taking Notes

**belief in reason as the key to all; new views on government—social contract, government’s purpose to protect rights, otherwise it is in breach of contract, checks on power of king; new views on society**

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**Teach the Main Idea**

**The Enlightenment**

1. **Teach** Ask students the Reading Focus questions to teach this section.
2. **Apply** Have students create flashcards to learn the ideas of the philosophers in this section. Have them write the idea on one side of the card and the philosopher’s name on the other side. Some ideas are similar, so students should write them as they appear in the text.
3. **Review** As you review the section, have students use their flashcards to quiz each other on the philosophers and their ideas.
4. **Practice/Homework** Have students create a resume for one of the philosophers in this section. 

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**Before You Read**

**Main Idea**

European thinkers developed new ideas about government and society during the Enlightenment.

**Reading Focus**

1. How was the Enlightenment influenced by reason?
2. What new views did philosophers have about government?
3. What new views did philosophers have about society?
4. How did Enlightenment ideas spread?

**Key Terms and People**

- Enlightenment
- social contract
- John Locke
- Jean-Jacques Rousseau
- Baron de Montesquieu
- Voltaire
- enlightened despot

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**Interactive Reader and Study Guide**

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**Teaching Notes**

- Why was a French philosopher jailed for his writings? In the early 1700s, Francois-Marie Arouet was the toast of Paris. His witty, satirical verses delighted Parisian aristocrats. But in 1717 he may have mocked the wrong man. The Duke of Orleans, who ruled France as regent until the young king Louis XV came of age, believed Arouet made fun of him. Outraged, the Duke of Orleans imprisoned Arouet in the Bastille prison for 11 months.

While in prison, Arouet began writing more serious works. He wrote his first play, called Oedipe, which would secure his reputation as the greatest French playwright of his time. He also completed an epic poem about Henry IV called La Henriade. But Arouet would be best known for his philosophical works, which he would write under the pen name Voltaire.

**The Age of Reason**

The Scientific Revolution convinced many European thinkers about the power of reason. With the scientific method and reason, scientists had made countless discoveries about the physical world. Could reason be used to study human nature and society as well?

In the 1600s, a new generation of philosophers began to view reason as the best way to understand truth. They came to the remarkable conclusion that reason could be used to solve all human problems. This exciting time of optimism and possibility is now called the Enlightenment, or the Age of Reason.

Ideas of the Enlightenment inspired educated people throughout Europe and beyond. People gathered in cof-

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**The Enlightenment**

**A Philosopher in Prison**

Engraving of Voltaire imprisoned in the Bastille, by François-Bouchot, 1800s.

- Voltaire began writing an epic poem in prison.

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**Interactive Reader and Study Guide**

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**Teaching Notes**

- Taking notes on the changes that the Enlightenment brought to society.

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**Teaching Notes**

- Taking notes on the changes that the Enlightenment brought to society.
feehouses and public spaces to debate the new ideas. Many writers published their ideas in books, magazines, and inexpensive pamphlets to help spread their ideas among educated readers. They were all inspired by the exciting notion that the problems of the world could be solved by educated people.

By the time the Enlightenment reached its peak in the 1700s, Paris was a center of intellectual activity. Eager to promote the new ideas, many wealthy Parisian women began hosting social gatherings called salons. These women brought together philosophers, artists, scientists, and writers regularly to discuss their ideas.

**READING CHECK** Find the Main Idea What exciting conclusion did philosophers reach during the Enlightenment?

**New Views on Government**

As the Enlightenment began, European thinkers began looking for ways to apply reason in order to improve the human condition. Some of these thinkers began to examine the organization of government.

**Thomas Hobbes** The English thinker Thomas Hobbes wrote about his views on government in his 1651 book, *Leviathan*. His experience of the violence and upheaval of the English civil war persuaded him that people were selfish and greedy. In the natural state, he wrote, people would lead lives that were “solitary, poor, nasty, brutish, and short.”

Hobbes believed that people needed governments to impose order. He argued that people in a society should agree to give up some freedoms to a strong leader in exchange for the peace, safety, and order that government could provide. Hobbes called this exchange between society and government the *social contract*. He believed that absolute monarchy was the best form of government because an absolute monarchy had the power of a leviathan, a massive sea monster. That strong, centralized power could be used to impose law and order.

**John Locke** Another English philosopher, John Locke, believed that people were naturally happy, tolerant, and reasonable. He argued that all people were born equal with the natural rights of life, liberty, and property.

Locke stated that the purpose of government was to protect people’s natural rights. He believed that monarchs were not chosen by God. Instead, the people consented to the government, whose power was limited by laws. In *Two Treatises on Government*, Locke described the importance of the fairness of law.

**Jean-Jacques Rousseau** The French philosopher Jean-Jacques Rousseau (1712–1778) believed that people were basically born good.

**Rousseau’s Social Contract**

Jean-Jacques Rousseau believed that the social contract was not just between the governors and the governed but between all members of society.

“What then is government? It is an intermediary body established between the subjects and the sovereign [king] to keep them in touch with each other. . . . The government’s power is only the public power vested in it. . . . when the [government] has a particular will of its own stronger than that of the sovereign. . . . at that moment the social union will disappear and the body politic will be dissolved.”


**Differentiating Instruction**

**Learners Having Difficulty**

1. Review with students the importance of reason for the philosophers.
2. Have students write a poem or song called “Ode to Reason” that could have been written by a philosopher. Encourage students to find creative ways to praise reason and all of the things that could be accomplished through it.
3. Have volunteers recite their poems for the class. (Verbal-Linguistic, Auditory-Musical)

**Alternative Assessment Handbook**, Rubric 2b: Poems and Songs

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**Direct Teach**

1. How was the Enlightenment influenced by reason? Like scientists, philosophers emphasized use of reason to understand truth; used reason to study human condition.

**The Age of Reason**

**Recall** What was the Enlightenment? A time of optimism and possibility when people used reason to attempt to solve the problems of the world.

**Describe** What role did salons play in the Enlightenment? Brought together philosophers, artists, scientists, and writers to discuss new ideas.

**New Views on Government**

**Analyze** How did the views of Hobbes and Locke about humans in their natural state affect their political ideas? Hobbes—people naturally bad, need all-powerful monarch to protect them; Locke—people naturally good, need government to protect rights.

**Elaborate** If applied, how would Locke’s economic theory affect taxes? Possible answer—state has no natural right to property or money.

**Primary Sources**

Primary Sources 1. A group created to keep the subjects and the kings in touch with each other; 2. The social contract would cease to exist.

**Reading Check** Reason could be used to solve all human problems.
New Views on Government

Describe What is separation of powers? power divided among several branches of government

Explain According to Montesquieu, how was Great Britain’s government an example of separation of powers? divided into branches: parliament made laws, king carried out laws, court interpreted laws

Info to Know

The Encyclopedia The word encyclopedia means “circle of teachings.” Although a slim three-volume set was produced in English, French philosopher Denis Diderot edited perhaps the first work that is truly worthy of that name. Encyclopedia or Systematic Dictionary of the Arts, Sciences, and Crafts filled 35 volumes by the time it was completed in 1777. Contributors included many leading thinkers of the Enlightenment.

New Views on Society

Recall Why was Voltaire imprisoned? criticisms of nobility, government, and the Church

Explain How did Voltaire express his ideas? by writing with sharp wit

Two Views on Society

Thomas Hobbes

After living through the English civil war, Thomas Hobbes became convinced that society needed a strong central authority to control and contain the natural barbarism of humans.

“In a state of nature, there is . . . no Knowledge of the face of the Earth; no account of Time; no Arts; no Letters; no Society; and which is worst of all, continual fear, and danger of violent death; And the life of man, solitary, poor, nasty, brutish, and short.”

Thomas Hobbes

—Leviathan, 1651

John Locke

John Locke believed that under ideal conditions, people lived according to a law of nature. Because people could interpret the law differently, they needed an authority to enforce it.

“The state of nature has a law of nature to govern it . . . no one ought to harm another in his life, health, liberty, or possessions . . . every one . . . may not . . . take away, or impair . . . the life, the liberty, health, limb, or goods of another.”

John Locke

—Two Treatises on Government, 1690

Contrast How do Hobbes’s and Locke’s views of human nature differ?

Rousseau also believed that society corrupted people. In The Social Contract, he wrote, “Man is born free but everywhere is in chains.”

Rousseau believed that government should work for the benefit of the common good, not for the wealthy few. He argued that individuals should give up some of their freedoms for the benefit of the community as a whole.

Rousseau despised inequality in society. He believed that all people were equal and should be recognized as equal in society. His view would inspire revolutionaries in years to come.

Baron de Montesquieu

Another French thinker, Baron de Montesquieu (MOHN-tes-kyoo), argued that the best form of government included a separation of powers. Dividing power among branches of government, he believed, would prevent any individual or group from abusing its power.

In 1748 Montesquieu published The Spirit of the Laws. In this book he wrote about his admiration for Great Britain’s government, because its powers were divided into branches. Parliament (the legislative branch) made the laws. The king and his advisers (the executive branch) carried out the laws. The court system (the judicial branch) interpreted the laws.

In truth, Montesquieu had misunderstood the structures of the British government. His misunderstanding, however, led him to a rational conclusion. The separation of powers allowed each branch of government to serve as a check against the power of the others—a concept known as the system of checks and balances. This concept would become an important part of the structure of later democratic governments, especially that of the United States.

Reading Check Make Inferences Why was the subject of government so important to Hobbes, Locke, Rousseau, and Montesquieu?

New Views on Society

While some Enlightenment philosophers focused their attention on government, others chose to deal with issues in society, such as religious toleration, women’s rights, and economic systems.

Voltaire One of the most outspoken French philosophers, or philosophers, was François-Marie Arouet, who wrote under the name Voltaire (vohl-TEYE). With biting wit, Voltaire attacked injustice wherever he saw it—among
the nobility, in the government, and in the church. His sharp wit created enemies, however, and Voltaire was imprisoned twice. He was later exiled to England for two years.

Voltaire used his pen to defend every principle that he held dear and to fight superstition and ignorance. Despite making enemies, Voltaire continued the struggle for justice, religious toleration, and liberty during his entire life.

**Diderot and the Encyclopedia** By the mid-1700s the great expansion of human knowledge convinced French philosophe Denis Diderot (deh-ROH) to compile it all into a single work, the *Encyclopedia*. This extensive 28-volume work explained new ideas about art, science, government, and religion. Its purpose was the promotion of knowledge.

Diderot worked on the *Encyclopedia* for 27 years, publishing the last volume in 1772. French leaders attacked the *Encyclopedia* because it criticized the church, the government, and the legal system. The government tried to stop publication in 1759, and Diderot completed the remaining volumes in secret. The *Encyclopedia* was an immediate success, and it helped spread Enlightenment ideas across Europe and to North America.

**Mary Wollstonecraft** Although Enlightenment thinkers questioned many established beliefs, they usually held traditional views about women. Many believed that women’s proper roles were as wives and mothers, and that women should receive only enough education to prepare them for those roles.

The English writer Mary Wollstonecraft rejected that view. Wollstonecraft demanded equal rights for women, especially in education—a radical view at the time. In her 1792 book, *A Vindication of the Rights of Woman*, she argued that if men and women had equal education, they would be equal in society.

**Adam Smith** Some thinkers, such as Scottish economist Adam Smith, used reason to analyze economic systems. In his 1776 book, *The Wealth of Nations*, Smith argued that business activities should take place in a free market. Smith was a strong believer in laissez-faire (lay-ZAY-fay) economics, an economic system that worked without government regulation. In French, laissez-faire means “leave alone”.

Smith believed that the economy would be stronger if the market forces of supply and demand were allowed to work freely.

**Voltaire’s Candide**

**Interpreting Literature as a Source** Works of fiction can be very revealing about the times in which they were written. Through the actions and words of the characters, the writer may include information about how people lived, worked, and interacted with each other.

The main character in *Candide* is a young man named Candide who is on a journey around the world in search of enlightenment and wisdom. In the excerpt below, Voltaire describes Candide’s view of the aftermath of an earthquake in Lisbon, Portugal. When analyzing a work of fiction, think about:

- the details in the literature and known facts
- the author’s point of view

After the earthquake, which had destroyed three-fourths of the city of Lisbon, the sages (wise men) of that country could think of no means more effectual to preserve the kingdom from utter ruin than to entertain the people with an auto-da-fe, it having been decided by the University of Coimbra, that the burning of a few people alive by a slow fire, and with great ceremony, is an infallible preventive of earthquakes.

—Voltaire, *Candide*, 1759

**Recent Scholarship**

In Jean-Jacques Rousseau, *Restless Genius*, Leo Damrosch presents an insightful view of Rousseau’s tumultuous life. Damrosch successfully explains the significance of *Emile*, the Social Contract, and the Confessions, and relates those works to Rousseau’s conflicted psyche.

*Jean-Jacques Rousseau: Restless Genius* by Leo Damrosch.


**Answers**

**Reading Like a Historian**

1. **burning a few people alive**

2. It reveals that the leaders did not think highly of the people they ruled.

**Reading Check** They used reason to challenge existing societal views and government policies.
Enlightenment Ideas Spread

Recall  Who were the enlightened despots? monarchs who made reforms based on Enlightenment ideas

Explain  Why did Catherine the Great shift her focus from reform to building a Russian empire? because she realized that if her reforms were too liberal she would lose the support of the wealthy landowners

CRF: Biography: Madame Geoffrin

Arrange the classroom like a salon for a discussion. Place chairs or desks in a circle and sit in the circle with students. Keep pressure low, and ask thought-provoking questions that will encourage students to get involved. This will work well if you treat the activity as an incentive and make guidelines ahead of time. Afterwards, ask students how the reorganization of desks and chairs affected the discussion.

Enlightenment Ideas Spread

The spirit of optimism and change was not confined to the salons and the coffeehouses of Europe. Enlightenment ideas quickly spread throughout Europe to Prussia, Russia, Austria, and beyond. Many philosophes appealed directly to European monarchs for change. As a result, a few monarchs developed a system of government in which they ruled according to Enlightenment ideas. These monarchs became known as enlightened despots.

Prussia  Frederick II, the king of Prussia from 1740 to 1786, believed that his duty was to rule with absolute power in order to build Prussia's strength. But he was also strongly influenced by the ideas of Voltaire. While Frederick was building Prussia a military power in Europe, he also introduced a number of reforms. Frederick ambitiously tried to establish a system of elementary education for all Prussian children. He abolished torture and supported most forms of religious tolerance. Frederick also reduced censorship.

Frederick's reforms were limited, however. For example, he did not extend religious tolerance to Jews; he tried to limit the number of Jews that could live in Prussia. Frederick also opposed serfdom, but he did not abolish it because he needed the support of the aristocracy. Like other enlightened despots, Frederick did not make reforms simply to achieve justice. He did so to build Prussia's strength and make his own rule more powerful.

Russia  When Catherine II became the ruler of Russia in 1762, she dreamed of establishing order and justice in Russia while supporting education and culture. Catherine not only read the works of the philosophes also corresponded with both Voltaire and Diderot.

Inspired by the philosophes, Catherine set about reforming Russia. She drafted a Russian constitution and a code of laws, but they were considered far too liberal and were never put
They were successful

national identity.

colonists began to experience a new sense of political views of Locke and Rousseau, the ideas as inspiration to break free from the authority would inspire not only reforms but human condition, people debated new ways of property, ignorance, and inequality as part of the solve any problem. Instead of accepting pov- people began to believe that human reason could spur many generations to enact reforms. Peo- reformers and revolutionaries would later use enlightenment philosophers promoted ideas that roles and rights of people in society. Enlighten- between the church and state, and debated the absolute monarchy, questioned the relationship absolute truths. They challenged beliefs in absolute monarch, questioned the relationship between the church and state, and debated the roles and rights of people in society. Enlighten-enment philosophers promoted ideas that reformers and revolutionaries would later use to change society.

The Enlightenment belief in progress would spur many generations to enact reforms. Peo- ple began to believe that human reason could solve any problem. Instead of accepting pov- erty, ignorance, and inequality as part of the human condition, people debated new ways of making society more just.

Enlightenment ideas about power and authority would inspire not only reforms but revolutions. For example, leaders in Great Britain’s American colonies would use those ideas as inspiration to break free from the British monarchy. Strongly influenced by the political views of Locke and Rousseau, the colonists began to experience a new sense of national identity.

Austria The most radical enlightened despot was Joseph II, the son of Maria Theresa of Aus- tria. When he became emperor in 1780, Joseph embarked upon an ambitious reform program. He eliminated torture and the death penalty and provided free food and medicine for poor citizens. As a Catholic emperor, he granted reli- gious tolerance to Protestants and Jews. His most significant reform was abolishing serf- dom and requiring that laborers be paid for their work.

These dramatic changes were resisted by the nobility and the church. They forced Joseph to revoke some of his reforms shortly before his death in 1790.

Later Times and Places During the Enlightenment, writers and philosophers questioned ideas that had been long held as absolute truths. They challenged beliefs in absolute monarchy, questioned the relationship between the church and state, and debated the roles and rights of people in society. Enlighten-enment philosophers promoted ideas that reformers and revolutionaries would later use to change society.

The Enlightenment belief in progress would spur many generations to enact reforms. Peo- ple began to believe that human reason could solve any problem. Instead of accepting pov- erty, ignorance, and inequality as part of the human condition, people debated new ways of making society more just.

Enlightenment ideas about power and authority would inspire not only reforms but revolutions. For example, leaders in Great Britain’s American colonies would use those ideas as inspiration to break free from the British monarchy. Strongly influenced by the political views of Locke and Rousseau, the colonists began to experience a new sense of national identity.

**Key Enlightenment Ideas**

- The ability to reason is what makes humans unique.
- Reason can be used to solve problems and improve people’s lives.
- Reason can free people from ignorance, superstition, and unfair government.
- The natural world is governed by laws that can be discovered through reason.
- Like the natural world, human behavior is governed by natural laws.
- Governments should reflect natural laws and encourage education and debate.

**SECTION 2 ASSESSMENT**

1. a. Define What was the Enlightenment?
   b. Explain Why did philosophers believe reason was important?
   c. Elaborate Why would salons be an effective way to spread Enlightenment ideas?
2. a. Identify Who wrote Leviathan?
   b. Analyze How did Hobbes and Locke differ in their ideas about government?
3. a. Recall Who were the philosophes?
   b. Explain What radical idea did Mary Wollstonecraft support?
   c. Predict Why might Adam Smith’s economic ideas appeal to business owners?
4. a. Identify What was an enlightened despots?
   b. Draw Conclusions How were Frederick II’s reforms limited?
   c. Evaluate What do you think is the most significant legacy of the Enlightenment?

**Critical Thinking**

5. Analyze Use a concept map like this one below and your notes from this section to describe how Enlightenment ideas affected government.

**Focus on Speaking**

6. Persuasion Suppose you are a philosophe who would like your mon- arch to make reforms based on Enlightenment ideas. Prepare a speech in which you try to convince Frederick the Great, Catherine the Great, or Joseph II to support your ideas. Be sure to include reasons why you believe it would be in the monarch’s best interests to make your reforms.

**Reading Focus**

**Enlightenment Ideas Spread**

**Analyze** Were the enlightened despots truly enlightened? possible answers—yes, passed reforms; no, abandoned reforms when politically necessary

**Predict** How might Enlightenment ideas inspire revolutions? possible answer—People might rise up against governments who did not adhere to the social contract.

**Reading Check** They were successful but limited by political opposition.

**Answers**

**Reading Check** They were successful but limited by political opposition.

**Online Quiz** go.hrw.com

**Assess**

**SE Section 2 Assessment**

**Progress Assessment:** Section 2 Quiz

**Alternative Assessment Handbook**

**Reteach/Intervene**

**Interactive Reader and Study Guide, Section 2**

**Interactive Skills Tutor CD-ROM**

**Section 2 Assessment Answers**

1. a. a time of optimism in which people used reason to solve human problems
   b. because it helped people to abandon traditional beliefs
   c. possible answer—Salons brought together many different groups of people to share ideas.
2. a. Thomas Hobbes
   b. Hobbes—government imposes order, monarch should be obeyed; Locke—government protects rights, should be limited
3. a. French philosophers of the Age of Reason
   b. equal rights for women
4. a. a ruler who made reforms based upon Enlightenment ideas
   b. only helped certain people; made some reforms to increase his own power
   c. possible answer—American and French revolutions would not have occurred.
5. Notes should mention that people began to question traditional authorities.
6. Speeches should show an unerstanding of Enlightenment ideas.

**Interactive Skills Tutor CD-ROM**

**Answers**

**Reading Check** They were successful but limited by political opposition.
Getting Started

Use the Interactive Reader and Study Guide to familiarize students with the section content.

Interactive Reader and Study Guide, Section 3

Academic Vocabulary

Review with students the high-use academic term in this section.

regulation a law designed to control or govern conduct (p. 183)

CRF: Vocabulary Builder: Section 3

Taking Notes

first successful English colonies; Seven Years’ War and new tax policies; opposition and increase in tensions; fighting breaks out; Common Sense; Declaration of Independence; America wins war

The American Revolution

Main Idea

Enlightenment ideas led to revolution, independence, and a new government for the United States.

Reading Focus

1. What were some of the causes of change and crisis in the American colonies?
2. How was the struggle for independence affected by Enlightenment concepts?
3. How did American colonists form a new government?

Key Terms and People

Stamp Act
Thomas Jefferson
Benjamin Franklin
George Washington
Treaty of Paris
James Madison

federal system

Teach the Main Idea

1. Teach Ask students the Reading Focus questions to teach this section.
2. Apply Draw three ladders for students to see. Label the tops of the ladders with the names of the topics in this section: Change and Crisis, Struggle for Independence, and Forming a New Government. Have students copy the ladders and fill in the rungs of the ladders with the main ideas of each topic.
3. Review As you review the section, have students explain the various ideas that made an impact during the American Revolution.
4. Practice/Homework Have students write an open letter from an Enlightenment philosopher to the American colonists, encouraging them in their struggle against England.

Visual-Spatial, Verbal-Linguistic

Alternative Assessment Handbook, Rubric 25: Personal Letters
Change and Crisis

By the mid-1700s dramatic new Enlightenment ideas had spread as far as North America. These ideas inspired Great Britain’s colonists to seek independence and forge a new nation founded on the ideals of the Enlightenment.

Forming a New Identity

Since the establishment of the first English settlement in North America in the early 1600s, the British colonies had expanded rapidly along the east coast. By 1770 the colonies had a population of more than 2.1 million people.

The colonies offered many opportunities that simply were not available in Great Britain. Land was plentiful and cheap. The English class system was largely absent, and individuals could more easily advance themselves through intelligence and hard work.

By the mid-1770s the colonies had been established for nearly 150 years. Although the colonists were British subjects, they were allowed a large measure of independence. Each colony had its own government and made most of its own laws. Over time, the colonists began to identify more closely with the colonies and less with Britain itself.

Opposing British Policies

Trouble erupted when Britain began to assert its right to impose laws on the colonies. In the 1760s conflict between some colonists and Britain escalated rapidly.

Britain defeated France in the French and Indian War in 1763, and France had to give up its North American colonies. The war had been very expensive for Britain. Because removing the French benefited the colonists, Britain decided to make the colonies pay part of the cost in the form of new taxes.

In 1765 Parliament passed the Stamp Act, which required colonists to pay a tax for an official stamp on all newspapers, legal documents, and other public papers. Colonial leaders were outraged that Parliament taxed them without representation there to plead their case. They called for a boycott of English goods, which caused Parliament to repeal the act in 1766.

The British, in 1767, imposed a new series of taxes on glass, paper, paints, and tea. FURIOUS merchants in Boston, Massachusetts, one of the largest colonial cities and a major port, called for another boycott of English goods. The British sent in troops to keep order in the city. As a result, Bostonians harassed the troops constantly on the city’s streets.

Finally, in 1770 British discipline snapped. Troops shot and killed five men in an incident known as the Boston Massacre. Most of the Townshend Acts were partially repealed after another colonial boycott. However, the tax on tea remained.

In 1773 a group of rebellious Bostonians called the Sons of Liberty boarded three ships in Boston Harbor. Led by Samuel Adams and Paul Revere, the Sons of Liberty dumped hundreds of crates of tea into the harbor to protest the tax, an act known as the Boston Tea Party. The British closed the port of Boston and passed the so-called Intolerable Acts, regulations that limited the freedoms of the colonists.

The colonists called the First Continental Congress in Philadelphia in 1774 to list their grievances against the British government. A plan to reconcile their differences with the British was presented, but it was voted down.

Revolution Begins

The Sons of Liberty in Massachusetts expected a war. As a consequence, they hid weapons in the countryside and towns west of Boston. In April 1775 hundreds of British troops marched out of Boston toward the towns of Lexington and Concord, intending to find these weapons. At dawn on April 19, British troops confronted about 75 colonial militiamen in Lexington. Shots rang out, and the American Revolution began.

George Washington’s leadership was crucial to an American victory in the Revolutionary War. When he took command of the American forces in 1775, he faced the daunting task of leading an army of untrained militiamen against one of the world’s strongest military forces.

But Washington’s leadership skills won him the loyalty of his troops. He enforced strict discipline, but he also demanded better food, clothing, and pay for them from the Continental Congress. Washington knew that if he looked after his soldiers’ needs, they would be better prepared to defeat the British army.

Identify Supporting Details

What were some of the ways in which Washington created an effective army against the British?

Change and Crisis

Recall

What did the Stamp Act do? required colonists to pay a tax for an official stamp on newspapers, legal documents, and other public papers

Identify Cause and Effect

What actions did British tax policies prompt in the colonies? boycotts of British goods, tension with British troops, Boston Massacre, Boston Tea Party

Develop

If you had been the ruler of Great Britain during the unrest in the colonies, what would you have done? possible answer—appease the colonists by keeping taxes at a minimum; establish martial law

Info to Know

British Revenues and Expenses

In the year 1755, the Seven Years’ War cost England about 3.5 million pounds sterling, approximately 700 million dollars today. Tax revenues were about 7 million pounds. By 1760, annual war expenditures had reached nearly 14 million pounds, although tax revenues had only been increased to about 9 million.

Primary Source

“You know that these two nations [France and England] have been at war over a few acres of snow near Canada, and they are spending on this fine struggle more than Canada itself is worth.” —Voltaire, Candide, Chapter 23

Answers

Faces of History enforced strict discipline; won loyalty of troops; demanded better pay, food, and clothing for his troops

Collaborative Learning

Come to America!

Materials: poster paper, art supplies

Background: Tell students that the early colonies were run by companies that had a large interest in the colonies’ lasting success. When England took over the colonies, it had a large strategic and economic interest in the colonies’ success.

1. Review with students the various attractions of America during the colonial period.

2. Organize students into small groups. Each group should designate a designer, artist, letterer, and fact checker. The fact checker’s job is to verify the historical accuracy of the images.

3. Have each group create a print advertisement to convince people to settle in America. Advertisements should showcase the attractions of America and feature a large slogan.

4. Have volunteers present their advertisements to the class.

Alternative Assessment Handbook, Rubric 2: Advertisements

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How was the struggle for independence affected by Enlightenment concepts?

The concept of the social contract led colonists to believe Great Britain could not rule the colonies without their consent; Enlightenment ideas were used in the Declaration of Independence.

Struggle for Independence

Identify Who was on the committee to write the Declaration of Independence? Thomas Jefferson, John Adams, Benjamin Franklin, and others

Analyze Did the Declaration of Independence present new or old ideas? Explain your answer, possible answer—was influenced by Magna Carta, English Bill of Rights, and Enlightenment ideas, but Declaration presented those ideas in a new way

Predict How do you think the English government reacted to the Declaration? possible answer—views unchanged; still needed to keep colonies under control for economic reasons

CRF: Biography: Benjamin Franklin

About the Illustration

This illustration is an artist’s conception based on available sources. Historians, however, are uncertain exactly what this scene looked like.

Info to Know

Indentured Servants Approximately half of the new settlers in the North American colonies were indentured servants. These people signed a contract called an indenture in order to gain passage to the colonies. Indentured servants were fairly expensive to obtain, but they worked on their employer’s land from four to seven years. After they finished their term, they were given food, clothing, tools, and some money, and could stake their own claim to land.

Not all colonists were Patriots, or those who wanted independence from Britain. Many colonists remained loyal to the British. Others thought that such a war was too risky.

In his January 1776 pamphlet, Common Sense, writer Thomas Paine argued that the colonies had matured to the point that they no longer needed British rule. Instead, he argued, they deserved independence. Widely read, Thomas Paine’s Common Sense helped the Patriots gain popular support for the cause of independence.

Reading Check Compare What did the Stamp Act and the Townshend Acts have in common?

Struggle for Independence

The American Revolution was the first war in which old ideas about government were challenged by the ideas of the Enlightenment. The Patriots created a nation based on these ideas.

Declaring Independence During the meeting of the Second Continental Congress in 1776, a committee formed to write a document declaring the colonies’ independence from Britain. Members of the committee were well-educated leaders, such as John Adams, Thomas Jefferson, and Benjamin Franklin, who were familiar with Enlightenment concepts. Jefferson wrote a draft of the Declaration, incorporating ideas from Locke and Rousseau. On July 4, 1776, the Continental Congress adopted the Declaration of Independence.

The Declaration of Independence was an elegant expression of Enlightenment political philosophy. Many of these ideas were presented in the Preamble.

HISTORY’S VOICES

“That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed,—That whenever any Form of Government becomes destructive of these ends, it is the Right of the People to alter or to abolish it, and to institute new Government . . .”

—The Declaration of Independence, 1776

Valley Forge From December 1777 to June 1778 the Continental Army camped at Valley Forge, a hilltop near Philadelphia. Here soldiers endured a harsh winter, very little food, and disease. Despite these hardships, the soldiers who left Valley Forge were a more unified and disciplined army.

Women at the camp cooled and took care of sick soldiers.

As many as 12 men shared a tiny hut like this one.

Reading Focus: Comparing and Contrasting

Reading Skill

British Policies and Taxes

1. Review with students the information in the text about British policies and taxes leading up to the American Revolution.

2. Have students create two political cartoons—one that opposes British policies, implying they are unjust, and the other that supports them, implying that the colonists are complaining unnecessarily.

3. Have volunteers present their political cartoons to the class.

4. Guide a class discussion about the differing viewpoints expressed in students’ cartoons.

Visual-Spatial

Alternative Assessment Handbook, Rubric 27: Political Cartoons

Answers

Reading Check Both imposed taxes on the colonies.
The Declaration of Independence drew ideas from the English Bill of Rights of 1689, which protected citizens’ right to a trial, the right to elect members of Parliament, and the right to an independent judicial system.

The Revolutionary War Before independence had been declared, the Second Continental Congress assigned George Washington as the commanding general of the army in June 1775. The Americans had little money. However, they had a courageous and resourceful leader in General Washington, as well as the advantage of fighting in their own land.

The American Revolution began poorly for the British, who evacuated Boston in June 1775 after the Americans positioned cannons overlooking the city. British troops later defeated Washington in the Battle of Long Island, and the Continental Army was driven into New Jersey. Beaten and bruised, Washington engineered a surprising and daring victory by crossing the icy Delaware River and defeating British forces at Trenton.

In 1777 the British defeated Washington’s forces in New Jersey, and Washington moved into Pennsylvania. Philadelphia fell to the British, and Washington’s army spent a bitter and deadly winter at Valley Forge.

In upstate New York, the British were also winning battles in the summer of 1777. In October, however, the Americans trapped British general Burgoyne’s army at the Battle of Saratoga. The British surrendered and the victory was a crucial win for the Americans. At the same time, Benjamin Franklin was in Paris seeking aid from the French. The victory at Saratoga was exactly the news he needed. Franklin was able to convince the French to contribute heavily to the American cause. This alliance became a turning point in the war.

Over the next two years, the Americans strengthened their forces. The British adopted a strategy to divide the colonies in two. They captured Savannah, Georgia in 1778 and Charleston, South Carolina in 1780. In South Carolina, the Americans made numerous attacks on the British.

In September 1781 the French and American armies surrounded the British army under Lord Cornwallis in Yorktown, Virginia. After a siege of several weeks, Cornwallis grew tired of waiting for the British reinforcements. Lord Cornwallis and his troops surrendered to General Washington on October 19, 1781. The American colonists had won their independence from Great Britain.

***Struggle for Independence***

**Explain** Why was the Battle of Saratoga a turning point in the war? Americans captured large army; Franklin able to get aid from France

**Draw Conclusions** How did American forces use their advantages to win the war? relied on Washington’s great leadership; used knowledge of land to launch guerrilla attacks: surrounded British forces on peninsula

**Wealth and the Revolution** Many historians have pointed out that the American Revolution was primarily a power struggle among members of the upper class. The men who engineered the revolt generally belonged to the wealthy ruling class; George Washington, for instance, was the richest man in the colonies. The majority of soldiers, however, were poor men. Rich men could avoid being drafted by paying for substitutes to fight for them. The military also offered incentives to the poor such as money and a change in social status.

**Primary Source**

“These are the times that try men’s souls. The summer soldier and the sunshine patriot will, in this crisis, shrink from the service of their country; but he that stands it now, deserves the love and thanks of man and woman.” —Thomas Paine, The American Crisis, no. 1, Dec. 23, 1776

**Answers**

**History Close-Up** possible answer—improved their morale and proved that they were a strong, united force
How did American colonists form a new government? replaced Articles of Confederation with a new Constitution and Bill of Rights

Forming a New Government

Identify What powers did the government lack under the Articles of Confederation? had no power to tax or negotiate with foreign powers

Contrast How did the Constitution differ from the Articles of Confederation? created a federal system of government, divided power among three branches of government

Explain How did the Bill of Rights become part of the Constitution? A group of opponents wanted protection for individual rights to be added to the Constitution.

In September 1783 the British government formally recognized the independence of the United States by signing the Treaty of Paris. Benjamin Franklin and other American leaders signed the document in Paris. This treaty set the geographic boundaries for the new United States. The treaty gave the Americans not only independence but also much greater territory than the original 13 colonies. The Americans gained all land east of the Mississippi River and north of the 31st parallel.

The influence of Enlightenment thought on the Revolution was very powerful. The founding principle of the Constitution is that government exists for the people. This principle documents. Have students search for similarities in the documents. Suggest that students first read the American documents and then split up the other selection and search for similar language and ideas. Have students compile the similarities into an annotated list.

3. Have groups present their lists to the class.

Above Level

Verbal-Linguistic

Alternative Assessment Handbook, Rubrics: Comparing and Contrasting, and 30: Research
reflects Locke’s and Rousseau’s idea of government by consent of the people. The division of government into three branches reflects Montesquieu’s idea of the separation of powers.

The Bill of Rights A group of opponents to the Constitution argued that it failed to protect the rights of citizens. They wanted protection for individuals’ rights to be added to the Constitution. Congress responded with the Bill of Rights, the first 10 amendments to the Constitution. The Bill of Rights protected the natural rights advocated by Voltaire, Locke, and Rousseau, such as the freedoms of speech and religion. The Bill of Rights protected a number of other rights, but most important, it guaranteed people equality, or due process, of law.

Impact of American Government News of the American colonies’ successful revolution had a tremendous impact on other governments, especially in France. The French king Louis XVI had supported the American Revolution. However, his form of government could not have furthered from the ideals of the colonists. He was an absolute monarch who taxed his people without mercy and cared nothing for their suffering. The loss of the Seven Years’ War had also added to France’s troubles. Additionally, the king’s support of the American war effort had been expensive and contributed to France’s economic problems.

France would experience the upheaval of revolution beginning in 1789. One of the many reasons for that revolution was the inspiration of the American example. A group of distant British colonies had adopted the ideals of the Enlightenment and shown that it was possible to oppose tyranny. This new government was created based on the principles of liberty and equality. The courage and determination of the soldiers who fought in the Revolution, and the wisdom of the framers of the Constitution, have stood as shining examples to movements against oppression ever since.

Reading Check Find the Main Idea How did the Constitution and the Bill of Rights change the government and society of the United States?

Critical Thinking
1. a. Identify Who was Thomas Paine, and what did he write?
   b. Analyze How did opposition to British tax policies affect the American colonies?
   c. Evaluate Do you think you would have joined the colonial rebellion in 1770? Why or why not?
2. a. Recall What was the Treaty of Paris?
   b. Draw Conclusions How did Enlightenment ideas influence the Continental Congress in 1776?
3. a. Recall When were the Articles of Confederation approved?
   b. Explain Why was a Constitutional Convention called in 1787?
   c. Make Judgments Do you think it was a wise decision to add the Bill of Rights to the Constitution? Why or why not?
4. Events should include some of the following—Stamp Act; Revolutionary War; Treaty of Paris signed; Constitution signed; Articles of Confederation, and Bill of Rights.
5. Letters should include details from the section, such as: no taxation without representation; colonies no longer needed British rule; people had right to form new government based on Enlightenment principles.

Answers Reading Check caused anger about taxation without representation; colonial leaders supported creation of new nation; committee formed at Continental Congress; Jefferson wrote draft; adopted by the Congress