

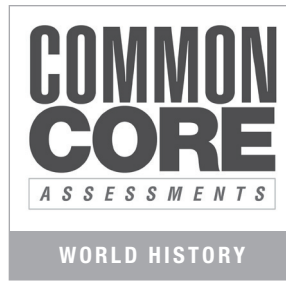
WORLD HISTORY

The
Scientific Revolution

**COMMON
CORE**

A S S E S S M E N T S

MindSparks
CHALLENGING STUDENTS TO THINK HISTORICALLY



The Scientific Revolution

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Teacher Introduction

These Common Core History Assessments are designed to help your students develop key literacy and history thinking skills as they learn about the scientific revolution. The assessments are intended to be *formative* more than *summative*. That is, they are meant to be part of the instructional process itself, providing you and your students with information at a point when timely adjustments in teaching and learning can be made.

Similar sets of assessments are available (or planned) for each unit in a typical world history class.

★ *Historical Thinking and the Challenge of the Common Core*

This set includes nine assessments aligned with the first nine Common Core History/Social Studies Reading Standards. We have left out the tenth Common Core History/Social Studies Reading Standard, which does not lend itself to assessments of the sort provided here. The set also includes two writing tasks aligned with two key Common Core History/Social Studies Writing Standards.

These Common Core standards challenge history teachers to develop in students the complex literacy skills they need in today's world and the ability to master the unique demands of working with historical primary and secondary source texts. The Common Core standards are supportive of the best practices in teaching historical thinking. Such practices include close reading, attending to a source's point of view and purpose, corroborating sources, and placing sources in their historical context. These are the skills needed to make history less about rote learning and more about an active effort to investigate and interpret the past.

These assessments are also useful in many ways for ELA teachers. They assess many of the skills specified in the College and Career Readiness Anchor Standards, which put a good deal of emphasis on the reading of informational texts. The Anchor Standards form the basis for all of the various Common Core standards for English Language Arts.

★ *What Are These Assessments Like?*

- **A group of nine reading skills assessments and two writing tasks for each major era of world history**

Each reading skills assessment is based on one of the key Common Core History/Social Studies Reading Standards—Assessment 1 addresses Common Core Reading Standard 1, Assessment 2 addresses Common Core Reading Standard 2, and so on. Two writing tasks are based on the first two College and Career Readiness Anchor Standards for Writing, which are the basis for the Common Core History/Social Studies Writing Standards. The two writing standards focus on writing arguments to support claims and writing informative/explanatory texts.

- **Based on primary or secondary sources**

In most cases, one primary source is used. In some cases, an assessment is based on more than one primary source or on a primary and a secondary source. The sources are brief. In most cases, texts have been slightly altered to improve readability, but without changing meaning or tone. Links to online versions of print media are available in the Bibliography. Please note that these links were valid at the time of production, but the websites may have since been discontinued.

Teacher Introduction

- **Brief tasks promoting historical literacy**

For each assessment, students write brief answers to one or two questions. The questions are not tests of simple factual recall. They assess the student's mastery of the skills addressed by that assessment's Common Core History/Social Studies Standard.

- **Two versions of each of the nine reading standards assessments**

A *basic* and an *advanced* version of each assessment are provided. The *basic* assessment addresses the Common Core Standard for grades 6–8. The *advanced* assessment is based on the Common Core Standard for grades 9–10 and grades 11–12 combined. Each version uses the same source or sources. In some cases, sources have been somewhat shortened for the *basic* version.

- **Easy to use as both learning and assessment tools**

These assessments do not take valuable time away from instruction. The primary sources and background information on each source make them useful mini-lessons as well as tools to assess students' historical thinking skills. The sources all deal with themes and trends normally covered when teaching the relevant historical era.

- **Evaluating student responses**

Brief but specific suggestions are provided, defining acceptable and best responses to each question asked in the assessment. The suggestions are meant to aid in evaluating students, but even more importantly, they are a way for teachers to help students better understand and master the skills on which the assessment is focused.

Assessment 1 *Basic Level*

The Medieval Worldview

★ Key Ideas and Details

1. (6–8) Cite specific textual evidence to support analysis of primary and secondary sources.

★ Using This Assessment

These Common Core History Assessments are intended to help your students develop key literacy and history thinking skills as they study and master the content covered in their world history coursework. The assessments are intended to be *formative* more than *summative*. That is, they are meant to be part of the instructional process itself, providing you and your students with information at a point when timely adjustments in teaching and learning can be made.

Assessment 1 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 1 for grades 6–8. It asks students to cite specific textual evidence from two documents. It also challenges students to adapt that reading skill to the unique demands of thinking historically as they carefully interpret textual evidence in a primary source from a time in the past and a secondary source account of that same time in the past.

★ Evaluating Student Responses to This Assessment

Acceptable responses to the first assessment question should note the document's reference to Europe's growing awareness of and openness to ideas from other "more advanced cultures around it." It describes trade bringing new technology and also new knowledge to Europe. It also mentions the older learning of the ancient Greeks, Aristotle in particular, that Islamic societies preserved, and the desire of Europeans to absorb it. It also refers to new universities where scholars eagerly discussed many topics and fields. Finally, it refers to a growing culture fostering vigorous debate within the context of Christian teachings. Acceptable responses to the second assessment question should be able to see that Abelard deliberately confronted his students with contrasting points of view about theological issues and encouraged open debate about them. He does not question basic Christian faith, but he insists that vigorous debate is a part of that faith—even referring to Christ himself as modeling a questioning approach to teaching. All this fits well with Document 1's second paragraph describing the flourishing of a "spirit of sharp questioning and debate" in Europe in these centuries.

The Medieval Worldview

Directions: This exercise asks you to read a secondary source document and a primary source document carefully and answer questions about specific details in the documents. In order to better understand the documents, read and make use of the source information located just below each document. When you have studied the documents and the source information, answer the two assessment questions that follow.

CCS Standard 1: Cite specific textual evidence to support analysis of primary and secondary sources.

Document 1: A Secondary Source

In 1000 CE, the great civilizations of China, India, and the Islamic lands of the Middle East, North Africa, and Spain were far ahead of Europe in many ways, including the ways of science and philosophy. Yet within a few centuries, a great Scientific Revolution arose within Europe and then transformed human culture and history. How did this happen? First of all, Europe borrowed much from the more advanced cultures around it. As Europeans began to trade more with regions outside their lands, new techniques having to do with ships, maps, navigation, guns and gunpowder, horses and plows, and much more flooded in. In knowledge and culture, the Islamic lands had preserved much of the scientific and philosophical learning of the ancient Greeks. And Muslim thinkers added their own commentaries on this learning. By the 11th century, Europeans were becoming aware of this heritage and were eager to absorb as much of it as they could find. Borrowing of this sort requires that one be open to learning from others. A great effort began in Europe to translate the works of Aristotle and other ancient writers from Arabic and Greek into Latin, the language educated Europeans used. Within their new universities, Europe's students began to read and discuss works on law, medicine, theology, and natural philosophy. Natural philosophy dealt with many topics we today think of as part of physics, astronomy, and other sciences.

The teachers of Europeans in these settings were, above all, Aristotle and his Muslim and other commentators. However, Europeans did not slavishly accept what they read in the works of these writers. A tradition of "scholastic" reasoning and debate grew up. In it, all kinds of physical, moral, even theological matters could be explored. Europeans did not challenge the basic teachings of the Christian faith. But a spirit of sharp questioning and debate did flourish, and reason and logic were used to determine the truth of all sorts of beliefs. This spirit emerged well before Copernicus, Galileo and others launched what we call the Scientific Revolution.

Source Information: This is a secondary source document. It deals with changing ideas about knowledge in Europe in the late Middle Ages, before the Scientific Revolution of the 1500s and 1600s. A secondary source is an account of past events written later by someone who did not experience or take part in those events. As a secondary source, this document is not evidence from Europe's late Middle Ages. It is a later account by someone writing about that time. This secondary source passage is a revised version of the Introduction to *Europe's Teachers, Europe's Learners* by Jonathan Burack (Culver City, CA: MindSparks, 2008), pp. 8–9.

Document 2: A Primary Source

I present here a collection of statements of the Holy Fathers in the order in which I have remembered them. The discrepancies which these texts seem to contain raise certain questions which should present a challenge to my young readers to summon up all their zeal to establish the truth and in doing so to gain increased perspicacity. For the prime source of wisdom has been defined as continuous and penetrating inquiry. The most brilliant of all philosophers, Aristotle, encouraged his students to undertake this task with every ounce of their curiosity. He says: 'It is foolish to make confident statements about these matters if one does not devote a lot of time to them. It is useful practice to question every detail.' By raising questions we begin to inquire, and by enquiring we attain the truth, and, as the Truth [Christ] has in fact said: 'Seek, and ye shall find; knock, and it shall be opened unto you.' He demonstrated this to us by His own moral example when He was found at the age of twelve 'sitting in the midst of the doctors both hearing them and asking them questions.' He who is the Light itself, the full and perfect wisdom of God, desired by his questioning to give his disciples an example before He became a model for teachers in His preaching. When, therefore, I adduce passages from scriptures it should spur and incite my readers to inquire into the truth and the greater authority of these passages, the more earnest this inquiry should be.

Source Information: Peter Abelard (1079–1142) became a renowned teacher even as a very young man. His book *Sic et Non* presents conflicting statements by church fathers on theological topics. In the prologue to the book, he offers guidance for resolving conflicting quotations. This passage is from that prologue. The passage is quoted in full in *God and Reason in the Middle Ages* by Edward Grant (New York: Cambridge University Press, 2001), pp. 60–61.

Assessment Questions

1. Document 1 suggests that from the eleventh century on, European thinkers began to learn from a very wide range of ideas and other cultures. What evidence in the document backs up this claim? Cite several details from the text in your answer.
2. In what ways do Peter Abelard's comments in Document 2 provide evidence in support of the key points in Document 1? Cite details from both documents to support your answer.

Assessment 1 *Advanced Level*

The Medieval Worldview

★ Key Ideas and Details

- 1. (9–10)** Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.
- 1. (11–12)** Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.

★ Using This Assessment

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Assessment 1 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 1 for grades 9–10 and 11–12 combined. It asks students to cite specific textual evidence from two documents. It also challenges students to adapt that reading skill to the unique demands of thinking historically as they carefully interpret textual evidence in a primary source from a time in the past and a secondary source account of that same time in the past. As called for by the Common Core standard for grades 11–12, it also prompts students to relate the textual details to “an understanding of the text as a whole.”

★ Evaluating Student Responses to This Assessment

Acceptable responses to the first assessment question should note the document's reference to Europe's growing awareness of and openness to ideas from other “more advanced cultures around it.” It describes trade bringing new technology and also new knowledge to Europe. It also mentions the older learning of the ancient Greeks, Aristotle in particular, that Islamic societies preserved and the desire of Europeans to absorb it. It also refers to new universities where scholars eagerly discussed many topics and fields. Finally, it refers to a growing culture fostering vigorous debate within the context of Christian teachings. In Document 2, Peter Abelard strongly endorses this ethic of vigorous debate. He confronts his students with contrasting points of view about theological issues and encourages open debate about them. He accepts the correctness of Christian faith, but he insists that vigorous use of reasoned debate is a part of that faith—even referring to a story showing Christ himself as modeling just such a questioning attitude. Acceptable responses to the second assessment question may vary. Some may see Abelard's openness to debate as laying a foundation for ongoing research based on evidence, hypothesis, experiment, and reasoning. Others may see only the beginnings of such a spirit because Abelard confines himself to theological matters and logic without going outside a Christian framework in a search for evidence or systematic experimentation.

The Medieval Worldview

Directions: This exercise asks you to read a secondary source document and a primary source document carefully and answer questions about specific details in the documents. In order to better understand the documents, read and make use of the source information located just below each document. When you have studied the documents and the source information, answer the two assessment questions that follow.

CCS Standard 1: (9–10) Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information. **(11–12)** Cite specific textual evidence to support analysis of primary and secondary sources, connecting insights gained from specific details to an understanding of the text as a whole.

Document 1: A Secondary Source

In 1000 CE, the great civilizations of China, India, and the Islamic lands of the Middle East, North Africa, and Spain were far ahead of Europe in many ways, including the ways of science and philosophy. Yet within a few centuries, a great Scientific Revolution arose within Europe and then transformed human culture and history. How did this happen? First of all, Europe borrowed much from the more advanced cultures around it. As Europeans began to trade more with regions outside their lands, new techniques having to do with ships, maps, navigation, guns and gunpowder, horses and plows, and much more flooded in. In knowledge and culture, the Islamic lands had preserved much of the scientific and philosophical learning of the ancient Greeks. And Muslim thinkers added their own commentaries on this learning. By the 11th century, Europeans were becoming aware of this heritage and were eager to absorb as much of it as they could find. Borrowing of this sort requires that one be open to learning from others. A great effort began in Europe to translate the works of Aristotle and other ancient writers from Arabic and Greek into Latin, the language educated Europeans used. Within their new universities, Europe's students began to read and discuss works on law, medicine, theology, and natural philosophy. Natural philosophy dealt with many topics we today think of as part of physics, astronomy, and other sciences.

The teachers of Europeans in these settings were, above all, Aristotle and his Muslim and other commentators. However, Europeans did not slavishly accept what they read in the works of these writers. A tradition of "scholastic" reasoning and debate grew up. In it, all kinds of physical, moral, even theological matters could be explored. Europeans did not challenge the basic teachings of the Christian faith. But a spirit of sharp questioning and debate did flourish, and reason and logic were used to determine the truth of all sorts of beliefs. This spirit emerged well before Copernicus, Galileo and others launched what we call the Scientific Revolution.

Source Information: This is a secondary source document. It deals with changing ideas about knowledge in Europe in the late Middle Ages, before the Scientific Revolution of the 1500s and 1600s. A secondary source is an account of past events written later by someone who did not experience or take part in those events. As a secondary source, this document is not evidence from Europe's late Middle Ages. It is a later account by someone writing about that time. This secondary source passage is a revised version of the Introduction to *Europe's Teachers, Europe's Learners* by Jonathan Burack (Culver City, CA: MindSparks, 2008), pp. 8–9.

Document 2: A Primary Source

I present here a collection of statements of the Holy Fathers in the order in which I have remembered them. The discrepancies which these texts seem to contain raise certain questions which should present a challenge to my young readers to summon up all their zeal to establish the truth and in doing so to gain increased perspicacity. For the prime source of wisdom has been defined as continuous and penetrating inquiry. The most brilliant of all philosophers, Aristotle, encouraged his students to undertake this task with every ounce of their curiosity. He says: 'It is foolish to make confident statements about these matters if one does not devote a lot of time to them. It is useful practice to question every detail.' By raising questions we begin to inquire, and by enquiring we attain the truth, and, as the Truth [Christ] has in fact said: 'Seek, and ye shall find; knock, and it shall be opened unto you.' He demonstrated this to us by His own moral example when He was found at the age of twelve 'sitting in the midst of the doctors both hearing them and asking them questions.' He who is the Light itself, the full and perfect wisdom of God, desired by his questioning to give his disciples an example before He became a model for teachers in His preaching. When, therefore, I adduce passages from scriptures it should spur and incite my readers to inquire into the truth and the greater authority of these passages, the more earnest this inquiry should be.

Source Information: Peter Abelard (1079–1142) became a renowned teacher even as a very young man. His book *Sic et Non* presents conflicting statements by church fathers on theological topics. In the prologue to the book, he offers guidance for resolving conflicting quotations. This passage is from that prologue. The passage is quoted in full in *God and Reason in the Middle Ages* by Edward Grant (New York: Cambridge University Press, 2001), pp. 60–61.

Assessment Questions

1. What broad changes in Europe does Document 1 describe, and how do Peter Abelard's comments in Document 2 confirm Document 1's claims about those changes? Cite several details from the text in your answer.
2. Do you think Peter Abelard adopts a new "scientific" attitude toward knowledge? Cite details from his comments to support your answer.

Assessment 2 *Basic Level*

Nicolaus Copernicus

★ Key Ideas and Details

- 2. (6–8)** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

★ Using This Assessment

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Assessment 2 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 2 for grades 6–8. It asks students to summarize the central ideas in a source from the text itself without imposing ideas or attitudes external to the text. This is not easy to do. This activity assesses the ability to read closely in order to build an overall understanding of the source out of the text itself.

★ Evaluating Student Responses to This Assessment

Acceptable responses to the first assessment question should identify the problem as Copernicus's fears about the scornful response he might get if he published his views about a sun-centered universe. He feared this response because his views undermined the long-settled view of previous authorities that the Earth, not the sun, was the unmoving center of the universe. Answers to the second assessment question should see that Copernicus finally decided to publish his views because many well-respected scholars and church officials urged him to and assured him his reasoning would win over his opponents. Best answers will note that Copernicus is addressing the pope and wants to make it clear that he is anxious not to upset the church or challenge its religious doctrines.

Nicolaus Copernicus

Directions: This exercise asks you to read one primary source document carefully and answer two questions about specific details in the document. In order to better understand the document as a historical primary source, read and make use of the source information located just below the document itself. When you have studied the document and the source information, answer the assessment questions that follow.

CCS Standard 2: Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

A Primary Source Document

I can readily imagine, Holy Father, that as soon as some people hear that in this volume, which I have written about the revolutions of the spheres of the universe, I ascribe certain motions to the terrestrial globe, they will shout that I must be immediately repudiated together with this belief. For I am not so enamored of my own opinions that I disregard what others may think of them. I am aware that a philosopher's ideas are not subject to the judgment of ordinary persons, because it is his endeavor to seek the truth in all things, to the extent permitted to human reason by God. Yet I hold that completely erroneous views should be shunned. Those who know that the consensus of many centuries has sanctioned the conception that the earth remains at rest in the middle of the heaven as its center would, I reflected, regard it as an insane pronouncement if I made the opposite assertion that the earth moves. Therefore I debated with myself for a long time whether to publish the volume which I wrote to prove the earth's motion. . . . When I weighed these considerations, the scorn which I had reason to fear on account of the novelty and unconventionality of my opinion almost induced me to abandon completely the work which I had undertaken.

But while I hesitated for a long time and even resisted, my friends drew me back. Foremost among them was the cardinal of Capua, Nicholas Schönberg, renowned in every field of learning. Next to him was a man who loves me dearly, Tiedemann Giese, bishop of Chelmno, a close student of sacred letters as well as of all good literature. For he repeatedly encouraged me and, sometimes adding reproaches, urgently requested me to publish this volume and finally permit it to appear after being buried among my papers and lying concealed not merely until the ninth year but by now the fourth period of nine years. The same conduct was recommended to me by not a few other very eminent scholars. They exhorted me no longer to refuse, on account of the fear which I felt, to make my work available for the general use of students of astronomy. The crazier my doctrine of the earth's motion now appeared to most people, the argument ran, so much the more admiration and thanks would it gain after they saw the publication of my writings dispel the fog of absurdity by most luminous proofs. Influenced therefore by these persuasive men and by this hope, in the end I allowed my friends to bring out an edition of the volume, as they had long besought me to do.

Source Information: In Europe's Middle Ages, people believed that God created the universe as a home for man with the Earth naturally at its center. Greek scientist Claudius Ptolemy's Earth-centered universe was accepted by nearly all, including the Catholic Church. In the early 1500s, Polish astronomer Nicolaus Copernicus upset this view by proposing that Earth, like the other planets, revolves around the sun. His

notion launched the Scientific Revolution. His book *On the Revolutions of the Heavenly Bodies* was dedicated to Pope Paul III. In the book's dedication, Copernicus directs his remarks specifically to the pope. This passage is quoted on the Johann Friedrich and the Emergence of Scientific Anthropology Research Website, a PhD dissertation by Roger Brisson, Rijksuniversiteit Groningen, 2008.

Assessment Questions

1. In this document, Copernicus's central idea is a major problem he wants to explain to the pope. Summarize what this problem is and why Copernicus was worried about it.

2. What enabled Copernicus to finally resolve his problem?

Assessment 2 *Advanced Level*

Nicolaus Copernicus

★ Key Ideas and Details

- 2. (9–10)** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.
- 2. (11–12)** Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.

★ Using This Assessment

These Common Core History Assessments are intended to help your students develop key literacy and history thinking skills as they study and master the content covered in their world history coursework. The assessments are intended to be *formative* more than *summative*. That is, they are meant to be part of the instructional process itself, providing you and your students with information at a point when timely adjustments in teaching and learning can be made.

Assessment 2 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 2 for grades 9–10 and 11–12 combined. It asks students to summarize the central ideas in a source from the text itself without imposing ideas or attitudes external to the text. This is not easy to do. Moreover, when it comes to the unique demands of thinking historically we do also want students to use knowledge of historical context to help them interpret sources. But that sort of contextualizing also demands that students suspend their own present-day ideas while studying a source. This activity assesses the ability to read closely in order to build an overall understanding of the source out of the text itself.

★ Evaluating Student Responses to This Assessment

Acceptable responses to the first assessment question should identify the problem as Copernicus's fears about the scornful response he expects if he publishes his views about a sun-centered universe since all previous authorities have been sure that the Earth, not the sun, was the unmoving center of the universe. He resolved his fears and published his views because of all the well-respected scholars and religious officials who urged him to and assured him that his reasoning would win over his opponents. Answers to the second assessment question may vary, but they should note that Copernicus is probably worried about the religious objections to his teaching. His mentioning of the cardinal of Capua and the bishop of Chelmno could be intended to reassure the pope that his views are not a threat to the Christian teachings of the Catholic Church. His tone is one of great respect for the pope and for the ancient authorities whose views, nevertheless, he is challenging. He makes it clear to the pope that he believes in using human reason only to the extent it is "permitted by God."

Nicolaus Copernicus

Directions: This exercise asks you to read one primary source document carefully and answer two questions about specific details in the document. In order to better understand the document as a historical primary source, read and make use of the source information located just below the document itself. When you have studied the document and the source information, answer the assessment questions that follow.

CCS Standard 2: (9–10) Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text. **(11–12)** Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas.

A Primary Source Document

I can readily imagine, Holy Father, that as soon as some people hear that in this volume, which I have written about the revolutions of the spheres of the universe, I ascribe certain motions to the terrestrial globe, they will shout that I must be immediately repudiated together with this belief. For I am not so enamored of my own opinions that I disregard what others may think of them. I am aware that a philosopher's ideas are not subject to the judgment of ordinary persons, because it is his endeavor to seek the truth in all things, to the extent permitted to human reason by God. Yet I hold that completely erroneous views should be shunned. Those who know that the consensus of many centuries has sanctioned the conception that the earth remains at rest in the middle of the heaven as its center would, I reflected, regard it as an insane pronouncement if I made the opposite assertion that the earth moves. Therefore I debated with myself for a long time whether to publish the volume which I wrote to prove the earth's motion. . . . When I weighed these considerations, the scorn which I had reason to fear on account of the novelty and unconventionality of my opinion almost induced me to abandon completely the work which I had undertaken.

But while I hesitated for a long time and even resisted, my friends drew me back. Foremost among them was the cardinal of Capua, Nicholas Schönberg, renowned in every field of learning. Next to him was a man who loves me dearly, Tiedemann Giese, bishop of Chelmno, a close student of sacred letters as well as of all good literature. For he repeatedly encouraged me and, sometimes adding reproaches, urgently requested me to publish this volume and finally permit it to appear after being buried among my papers and lying concealed not merely until the ninth year but by now the fourth period of nine years. The same conduct was recommended to me by not a few other very eminent scholars. They exhorted me no longer to refuse, on account of the fear which I felt, to make my work available for the general use of students of astronomy. The crazier my doctrine of the earth's motion now appeared to most people, the argument ran, so much the more admiration and thanks would it gain after they saw the publication of my writings dispel the fog of absurdity by most luminous proofs. Influenced therefore by these persuasive men and by this hope, in the end I allowed my friends to bring out an edition of the volume, as they had long besought me to do.

Source Information: In Europe's Middle Ages, people believed that God created the universe as a home for man with the Earth naturally at its center. Greek scientist Claudius Ptolemy's Earth-centered universe

Assessment 3 *Basic Level*

William Harvey

★ Key Ideas and Details

- 3. (6–8)** Identify key steps in a text’s description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).

★ Using This Assessment

These Common Core History Assessments are intended to help your students develop key literacy and history thinking skills as they study and master the content covered in their world history coursework. The assessments are intended to be *formative* more than *summative*. That is, they are meant to be part of the instructional process itself, providing you and your students with information at a point when timely adjustments in teaching and learning can be made.

Assessment 3 is designed to measure students’ ability to master the skills described in Common Core History/Social Studies Reading Standard 3 for grades 6–8. It asks students to follow the way a set of ideas or sequence of events in a text interact together to describe a process or develop a central idea. This activity assesses the students’ ability to read closely in order to understand various connections between each detail and the next in a text.

★ Evaluating Student Responses to This Assessment

Answers to the assessment question should list the points in an outline such as this one:

1. I only agreed to make my ideas available “for general consideration” after spending years presenting them to my learned friends.
2. I did this because my ideas about how the heart works are very new. I could not convince others of their truth without first demonstrating them clearly to experts like these learned friends.
3. I kept my treatise short and did not discuss the ideas of others because I want to base my claims entirely on the evidence of the dissections I have performed.

William Harvey

Directions: This exercise asks you to read one primary source document carefully and answer one question about specific details in the document. In order to better understand the document as a historical primary source, read and make use of the source information just below the document itself. When you have studied the document and the source information, answer the assessment question that follows.

CCS Standard 3: Identify key steps in a text’s description of a process related to history/social studies (e.g., how a bill becomes law, how interest rates are raised or lowered).

A Primary Source Document

In my anatomical lectures, I have already and repeatedly presented you, my learned friends, with my new views of the motion and function of the heart. But having now for more than nine years confirmed these views by many demonstrations in your presence, illustrated them by arguments, and freed them from the objections of the most learned and skilful anatomists, I at length yield to the requests of many, and here present them for general consideration in this treatise.

Had I not presented the work through you, my learned friends, I should scarce hope that it could come out complete and without error. For you have in general been the faithful witnesses of almost all the instances from which I have either collected the truth or confuted error. You have seen my dissections. At my demonstrations, you have been accustomed to stand by and bear me out with your testimony. And as this book alone declares the blood to course and revolve by a new route, very different from what a host of learned and distinguished men have believed, I was greatly afraid that I might be charged with presumption if I presented my work to the public at home or abroad, unless I had first proposed the subject to you, had confirmed its conclusions by visible demonstrations in your presence, had replied to your doubts and objections, and secured the assent and support of our distinguished President [of the Royal College of Physicians]. For I was persuaded that if I could make good my views before you and our College, illustrious by its numerous body of learned individuals, I had less to fear from others.

My dear colleagues, I did not want to swell this treatise into a large volume by quoting the names and writings of anatomists, or to make a parade of the strength of my memory, the extent of my reading, and the amount of my pains. I learn and teach anatomy not from books but from dissections, not from the positions of philosophers but from the fabric of nature. Also, I do not think it right or proper to take from the ancients any honor that is their due, nor yet to dispute with the moderns or argue with those who have excelled in anatomy and been my teachers. I am a partisan of truth alone, and I have used all my endeavors, bestowed all my pains in an attempt to produce something agreeable to the good, profitable to the learned, and useful to letters.

Source Information: William Harvey (1578–1657) discovered how the heart pumps blood through the body. The excerpt in this document has been shortened and adapted from the opening dedication of his treatise *On the Motion of the Heart and Blood in Animals*. That dedication is directed “to his very dear

friend, doctor Argent, the excellent and accomplished President of the Royal College of Physicians, and to other learned physicians, his most esteemed colleagues.” Harvey’s treatise is in Volume 38 of *The Harvard Classics*, edited by Charles W. Eliot (New York: P. F. Collier and Son, 1909–14).

Assessment Question

In each of these three paragraphs, Harvey makes a separate point that adds to his central theme explaining why he waited so long to publish this work. State in outline form the three key points he makes in explaining this.

Assessment 3 *Advanced Level*

William Harvey

★ Key Ideas and Details

- 3. (9–10)** Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them.
- 3. (11–12)** Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.

★ Using This Assessment

These Common Core History Assessments are intended to help your students develop key literacy and history thinking skills as they study and master the content covered in their world history coursework. The assessments are intended to be *formative* more than *summative*. That is, they are meant to be part of the instructional process itself, providing you and your students with information at a point when timely adjustments in teaching and learning can be made.

Assessment 3 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 3 for grades 9–10 and 11–12 combined. It asks students to follow the way a set of ideas or sequence of events in a text interacts together to describe a process or develop a central idea. The activity assesses the students' ability to read closely in order to understand various connections between each detail and the next in a complex text. It also asks them to evaluate the explanation offered in the passage and consider how adequate it is.

★ Evaluating Student Responses to This Assessment

Answers to the assessment question should list the points in an outline such as this:

1. I only agreed to make my ideas available “for general consideration” after spending years presenting them to my learned friends.
2. I did this because my ideas about how the heart works are very new. I could not convince others of their truth without first demonstrating them clearly to experts like these learned friends.
3. I kept my treatise short and did not discuss the ideas of others because I want to base my claims entirely on the evidence of the dissections I have performed.

Answers to the assessment question should see that the new ideas about science stressed a need to base conclusions on careful observation, experiment and reasoning, not ancient authorities or Biblical references. Harvey sees the validity of his views as based mainly on careful observations of the dissections he makes. He discusses his need for the approval of his “learned friends,” not because they are authorities whose views he must accept but because they are knowledgeable witnesses of his dissections and the observations he bases on those dissections.

William Harvey

Directions: This exercise asks you to read one primary source document carefully and answer two questions about specific details in the document. In order to better understand the document as a historical primary source, read and make use of the source information just below the document itself. When you have studied the document and the source information, answer the assessment questions that follow.

CCS Standard 3: (9–10) Analyze in detail a series of events described in a text; determine whether earlier events caused later ones or simply preceded them. **(11–12)** Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain.

A Primary Source Document

In my anatomical lectures, I have already and repeatedly presented you, my learned friends, with my new views of the motion and function of the heart. But having now for more than nine years confirmed these views by many demonstrations in your presence, illustrated them by arguments, and freed them from the objections of the most learned and skilful anatomists, I at length yield to the requests of many, and here present them for general consideration in this treatise.

Had I not presented the work through you, my learned friends, I should scarce hope that it could come out complete and without error. For you have in general been the faithful witnesses of almost all the instances from which I have either collected the truth or confuted error. You have seen my dissections. At my demonstrations, you have been accustomed to stand by and bear me out with your testimony. And as this book alone declares the blood to course and revolve by a new route, very different from what a host of learned and distinguished men have believed, I was greatly afraid that I might be charged with presumption if I presented my work to the public at home or abroad, unless I had first proposed the subject to you, had confirmed its conclusions by visible demonstrations in your presence, had replied to your doubts and objections, and secured the assent and support of our distinguished President [of the Royal College of Physicians]. For I was persuaded that if I could make good my views before you and our College, illustrious by its numerous body of learned individuals, I had less to fear from others.

My dear colleagues, I did not want to swell this treatise into a large volume by quoting the names and writings of anatomists, or to make a parade of the strength of my memory, the extent of my reading, and the amount of my pains. I learn and teach anatomy not from books but from dissections, not from the positions of philosophers but from the fabric of nature. Also, I do not think it right or proper to take from the ancients any honor that is their due, nor yet to dispute with the moderns or argue with those who have excelled in anatomy and been my teachers. I am a partisan of truth alone, and I have used all my endeavors, bestowed all my pains in an attempt to produce something agreeable to the good, profitable to the learned, and useful to letters.

Assessment 4 *Basic Level*

Harvey's Observations

★ *Craft and Structure*

4. (6–8) Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.

★ *Using This Assessment*

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Assessment 4 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 4 for grades 6–8. It asks students to recognize that words and phrases must be understood in relation to the meaning of the text as a whole. In seeking to understand historical sources, this is an especially important challenge. Words and phrases need to be understood as they were used within their historical context. This activity assesses the students' ability to read closely in order to understand terms in these ways.

★ *Evaluating Student Responses to This Assessment*

Answers to the assessment question should produce a paragraph that simplifies language but includes all key concepts, such as this one:

Reasoning and observation both show that chambers of the heart called ventricles force blood through the heart and lungs to all parts of the body. Blood passes through tiny openings into the veins. It then moves from the outer parts of the body back to the heart, entering through the vena cava and the right atrium. The amount of blood flowing through the arteries and the veins daily is far greater than what could be supplied by the food a person needs. Instead, the blood moves in a circle through the body continuously. The heart's sole job is to push this blood along by means of its pulse—that is, its motion and contractions.

Harvey's Observations

Directions: This exercise asks you to read one primary source document carefully and answer one question about specific details in the document. In order to better understand the document as a historical primary source, read and make use of the source information just below the document itself. When you have studied the document and the source information, answer the assessment question that follows.

CCS Standard 4: Determine the meaning of words and phrases as they are used in a text, including vocabulary specific to domains related to history/social studies.

A Primary Source Document

Since all things, both argument and observation, show that the blood passes through the lungs and heart by the force of the ventricles, and is sent for distribution to all parts of the body, where it makes its way into the veins through pores of the flesh, and then flows by the veins from the periphery of the body to the center, from the lesser to the greater veins, and is by them finally discharged into the vena cava and right atrium of the heart, and this in such a quantity or in such an outflow through the arteries, and back through the veins, as cannot possibly be supplied by the food consumed. It is much greater than is needed for mere purposes of nutrition. It is absolutely necessary to conclude that the blood in the animal body is moved in a circle continuously; that this is the act or function which the heart performs by means of its pulse; and that it is the sole and only end of the motion and contraction of the heart.

Source Information: Before William Harvey's discoveries, people believed blood was continually formed anew from digested food and was used up by the body over and over. The main job of the heart was said to be to produce heat. Harvey offered his new view of the heart's role in his famous treatise *On the Motion of the Heart and Blood in Animals*. He summarizes his conclusions at the start of Chapter 14 of the treatise. This excerpt is adapted and simplified from the opening of that chapter. In it, the term "ventricle" refers to a large chamber in the heart that expels blood. The "vena cava" and "atrium" are places in the heart where blood is collected. Harvey's treatise is in Volume 38 of *The Harvard Classics*, edited by Charles W. Eliot (New York: P. F. Collier and Son, 1909–14).

Assessment Question

This passage contains a number of fairly difficult phrases. Notice those that are underlined. Also see the source information above regarding some of the words in the passage. Now rewrite the passage to make it easier for a young child to understand. Be sure to include all the underlined concepts in your more readable version of the passage.

Assessment 4 *Advanced Level*

Harvey's Observations

★ *Craft and Structure*

- 4. (9–10)** Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science.
- 4. (11–12)** Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10).

★ *Using This Assessment*

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Assessment 4 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 4 for grades 9–10 and 11–12 combined. It asks students to recognize that words and phrases must be understood in relation to the meaning of the text as a whole. In seeking to understand historical sources, this is an especially important challenge. Words and phrases need to be understood as they were used within their historical context. This activity assesses the students' ability to read closely in order to understand terms in these ways.

★ *Evaluating Student Responses to This Assessment*

Answers to the assessment question should produce a paragraph that simplifies language but includes all key concepts, such as this one:

Reasoning and observation both show that chambers of the heart called ventricles force blood through the heart and lungs to all parts of the body. Blood passes through tiny openings into the veins. It then moves from the outer parts of the body back to the heart, entering through the vena cava and the right atrium. The amount of blood flowing through the arteries and the veins daily is far greater than what could be supplied by the food a person needs. Instead, the blood moves in a circle through the body continuously. The heart's sole job is to push this blood along by means of its pulse—that is, its motion and contractions.

Answers to the second assessment question should note that Harvey explains the function of the heart entirely by reference to observable material organs and substances (heart, veins, blood, etc.) and mechanical principles of force and motion (the heart pumping blood, blood being forced into veins through tiny pores, etc.). No imagined, non-material, or supernatural concepts are used to explain any aspect of the heart as Harvey could observe it.

Harvey's Observations

Directions: This exercise asks you to read one primary source document carefully and answer questions about specific details in the document. In order to better understand the document as a historical primary source, read and make use of the source information just below the document itself. When you have studied the document and the source information, answer the two assessment questions that follow.

CCS Standard 4: (9–10) Determine the meaning of words and phrases as they are used in a text, including vocabulary describing political, social, or economic aspects of history/social science. **(11–12)** Determine the meaning of words and phrases as they are used in a text, including analyzing how an author uses and refines the meaning of a key term over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10).

A Primary Source Document

Since all things, both argument and observation, show that the blood passes through the lungs and heart by the force of the ventricles, and is sent for distribution to all parts of the body, where it makes its way into the veins through pores of the flesh, and then flows by the veins from the periphery of the body to the center, from the lesser to the greater veins, and is by them finally discharged into the vena cava and right atrium of the heart, and this in such a quantity or in such an outflow through the arteries, and back through the veins, as cannot possibly be supplied by the food consumed. It is much greater than is needed for mere purposes of nutrition. It is absolutely necessary to conclude that the blood in the animal body is moved in a circle continuously; that this is the act or function which the heart performs by means of its pulse; and that it is the sole and only end of the motion and contraction of the heart.

Source Information: Before William Harvey's discoveries, people believed blood was continually formed anew from digested food and was used up by the body over and over. The main job of the heart was said to be to produce heat. Harvey offered his new view of the heart's role in his famous treatise *On the Motion of the Heart and Blood in Animals*. He summarizes his conclusions at the start of Chapter 14 of the treatise. This excerpt is adapted and simplified from the opening of that chapter. In it, the term "ventricle" refers to a large chamber in the heart that expels blood. The "vena cava" and "atrium" are places in the heart where blood is collected. Harvey's treatise is in Volume 38 of *The Harvard Classics*, edited by Charles W. Eliot (New York: P. F. Collier and Son, 1909–14).

Assessment Questions

1. Rewrite the passage to make it easier for a young child to understand. Be sure to state all the underlined concepts more simply in your more readable version of the passage.
2. Consider this statement: "Wherever it could, the Scientific Revolution replaced supernatural with purely naturalistic descriptions of the things it sought to understand." Explain how Harvey's paragraph supports this statement.

Assessment 5 *Basic Level*

Francis Bacon

★ *Craft and Structure*

5. (6–8) Describe how a text presents information (e.g., sequentially, comparatively, causally).

★ *Using This Assessment*

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Assessment 5 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 5 for grades 6–8. It asks students to pay attention to a text's "structure"—that is, to the overall pattern or organizational arrangement of its headings, sentences, paragraphs, stanzas, chapters, as well as to its various stylistic features. These formal elements can contribute to a text's meanings in many ways. This activity assesses the students' ability to read closely in order to understand the impact of the way one historical primary source is structured to present its information.

★ *Evaluating Student Responses to This Assessment*

Acceptable responses to the first assessment question should see that the compare-and-contrast pattern fits because the passage compares two opposing ways of discovering truth, one stressing sense experience, the other stressing logical reasoning from general principles. Answers to the second assessment question should be able to state that one way of knowing builds ideas slowly from many observations of particular events or experiences, whereas the other quickly asserts "the most general axioms," or basic principles, and then uses logic to derive other generalizations from them. Bacon clearly favors the first of these approaches, calling it the "true but un-attempted way," whereas he says the other simply enables a person to "avoid labor."

Francis Bacon

Directions: This exercise asks you to read one primary source document carefully and answer questions about specific details in it. In order to better understand the document as a historical primary source, read and make use of the source information located just below it. When you have studied the document and the source information, answer the two assessment questions that follow.

CCS Standard 5: Describe how a text presents information (e.g., sequentially, comparatively, causally).

A Primary Source Document

There are and can exist but two ways of investigating and discovering truth. The one hurries rapidly away from the senses and particulars and asserts the most general axioms. From those basic principles seen as indisputable truth, it then derives and discovers the intermediate axioms. This is the way now in use. The other constructs its axioms from the senses and particulars, by ascending continually and gradually, till it finally arrives at the most general axioms, which is the true but un-attempted way.

The understanding, when left to itself, proceeds by the first way. For the mind is fond of starting off with generalities, that it may avoid labor, and after dwelling a little on a subject is fatigued by experiment.

Each of these two ways begins from the senses and particulars, and ends in the greatest generalities. But they are immeasurably different; for the one merely touches cursorily the limits of experiment, and particulars, whilst the other runs duly and regularly through them; the one from the very outset lays down some abstract and useless generalities, the other gradually rises to those principles which are really the most common in nature.

Source Information: This document contains a shortened and adapted excerpt from a work by Francis Bacon (1561–1626). Bacon was one of the earliest defenders of scientific research based on careful observation and experiment. The original passage is from Francis Bacon’s “*Novum Organum*,” first published in 1620. The full text appears in *The Works*, 3 vols., edited and translated by Basil Montague (Philadelphia: Parry and MacMillan, 1854).

Assessment Questions

1. “Text structure” refers to the way paragraphs and longer texts are organized, with different structures serving different purposes. Here is one kind of text structure:
 - *Compare and Contrast:* A pattern showing what is similar and what is different in two events, examples, processes, etc.

Explain why this statement describes the text structure of Document 1.

2. In your own words, explain what Bacon thinks is the right way to achieve true knowledge and why.

Assessment 5 *Advanced Level*

Francis Bacon

★ *Craft and Structure*

- 5. (9–10)** Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.
- 5. (11–12)** Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.

★ *Using This Assessment*

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Assessment 5 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 5 for grades 9–10 and 11–12 combined. It asks students to pay attention to a text's "structure"—that is, to the overall pattern or organizational arrangement of its headings, sentences, paragraphs, stanzas, chapters, as well as to its various stylistic features. Students should see how structure is deliberately used to enable the text to achieve certain goals. Such formal elements can contribute to a text's meanings in many ways. This activity assesses the students' ability to read closely in order to understand the impact of the way one historical primary source is structured to present its information.

★ *Evaluating Student Responses to This Assessment*

Acceptable responses to the first assessment question should see that the compare-and-contrast pattern fits because the passage describes two opposing ways of discovering truth, one stressing sense experience, the other stressing logical reasoning from general principles. Answers to the second assessment question should be able to state clearly that Bacon favors one way of knowing, the empirical approach that builds ideas slowly from many observations of particular events or experiences. He acknowledges that the other way also starts with particular events or experiences, but then quickly jumps ahead to assert "the most general axioms," using logic to derive other generalizations from them. Bacon clearly favors the empirical approach, calling it the "true but un-attempted way," whereas he says the other approach "lays down some abstract and useless generalities" and simply enables one to "avoid labor."

Francis Bacon

Directions: This exercise asks you to read one primary source document carefully and answer questions about specific details in it. In order to better understand the document as a historical primary source, read and make use of the source information located just below it. When you have studied the document and the source information, answer the two assessment questions that follow.

CCS Standard 5: (9–10) Analyze how a text uses structure to emphasize key points or advance an explanation or analysis. **(11–12)** Analyze in detail how a complex primary source is structured, including how key sentences, paragraphs, and larger portions of the text contribute to the whole.

A Primary Source Document

There are and can exist but two ways of investigating and discovering truth. The one hurries rapidly away from the senses and particulars and asserts the most general axioms. From those basic principles seen as indisputable truth, it then derives and discovers the intermediate axioms. This is the way now in use. The other constructs its axioms from the senses and particulars, by ascending continually and gradually, till it finally arrives at the most general axioms, which is the true but un-attempted way.

The understanding, when left to itself, proceeds by the first way. For the mind is fond of starting off with generalities, that it may avoid labor, and after dwelling a little on a subject is fatigued by experiment.

Each of these two ways begins from the senses and particulars, and ends in the greatest generalities. But they are immeasurably different; for the one merely touches cursorily the limits of experiment, and particulars, whilst the other runs duly and regularly through them; the one from the very outset lays down some abstract and useless generalities, the other gradually rises to those principles which are really the most common in nature.

Source Information: This document contains a shortened and adapted excerpt from a work by Francis Bacon (1561–1626). Bacon was one of the earliest defenders of scientific research based on careful observation and experiment. The original passage is from Francis Bacon’s “Novum Organum,” first published in 1620. The full text appears in *The Works*, 3 vols., edited and translated by Basil Montague (Philadelphia: Parry and MacMillan, 1854).

Assessment Questions

1. “Text structure” refers to the way paragraphs and longer texts are organized, with different structures serving different purposes. Here is a description of the text structure used in this passage:
 - *Compare and Contrast:* A pattern showing what is similar and what is different in two events, examples, processes, etc.

Why was this the appropriate text structure for Bacon to use in this passage?

2. Bacon says: “Each of these two ways [of knowing] begins from the senses and particulars, and ends in the greatest generalities.” What then is the difference between them?

Assessment 6 *Basic Level*

Galileo and Cardinal Bellarmine

★ Craft and Structure

- 6. (6–8)** Identify aspects of a text that reveal an author’s point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).

★ Using This Assessment

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Assessment 6 is designed to measure students’ ability to master the skills described in Common Core History/Social Studies Reading Standard 6 for grades 6–8. It asks students to note a text’s point of view as expressed by looking closely at details in the text itself. These details may take the form of emotional language, distorted or exaggerated descriptions, stereotyped labeling, etc. However, even a text with a neutral tone may express bias or point of view by selectively emphasizing some facts while omitting others. Therefore, students also need to go outside the text to interpret point of view by considering sourcing information such as the author’s background, purpose, and audience. In addition, students need to see that when sources express conflicting points of view they may still be reliable in certain ways—for example, by what they share in common or by backing up their claims with solid evidence.

★ Evaluating Student Responses to This Assessment

Acceptable answers to the first assessment question should note that Bellarmine insists the Bible’s meaning is determined by the “common agreement of the holy Fathers,” and these authorities all agree the Bible clearly says that the sun moves around the Earth and the Earth is immobile. Galileo accepts that the words in the Bible say this. However, he believes the Bible’s language simplifies many obscure concepts for “the common people.” He says the educated can handle the “true senses of such passages,” which may differ from the literal meaning of the words. This matters to him because he wants his sun-centered system to agree with the Bible’s true meaning, even though it goes against the literal meaning. Acceptable answers to the second assessment question will see that Bellarmine’s tone is calm; he even calls Galileo “prudent” at one point. Galileo is much more combative in tone, saying his opponents “hurled charges” at him and used “vain arguments” against his theories. Best responses will note that Bellarmine speaks with a tone of authority about what church councils “prohibit” and implies that Galileo will injure the faith if he insists the Earth really does move and the sun stands still. In other words, a threat can be detected in Bellarmine’s message even though his tone is mild.

Galileo and Cardinal Bellarmine

Directions: This exercise asks you to read two primary source documents carefully and answer questions about specific details in them. In order to better understand these documents as historical primary sources, read and make use of the source information located just below each document. When you have studied the documents and the source information, answer the two assessment questions that follow.

CCS Standard 6: Identify aspects of a text that reveal an author’s point of view or purpose (e.g., loaded language, inclusion or avoidance of particular facts).

Document 1: A Primary Source

Some years ago, as Your Serene Highness well knows, I discovered in the heavens many things that had not been seen before our own age. The novelty of these things, as well as some consequences which followed from them in contradiction to the physical notions commonly held among academic philosophers, stirred up against me no small number of professors—as if I had placed these things in the sky with my own hands in order to upset nature and overturn the sciences. They seemed to forget that the increase of known truths stimulates the investigation, establishment, and growth of the arts; not their diminution or destruction.

Showing a greater fondness for their own opinions than for truth they sought to deny and disprove the new things which, if they had cared to look for themselves, their own senses would have demonstrated to them. To this end they hurled various charges and published numerous writings filled with vain arguments. . . . The reason they condemned the opinion that the earth moves and the sun stands still is that in many places in the Bible one may read that the sun moves and the earth stands still. Since the Bible cannot err, it follows that anyone takes an erroneous and heretical position who maintains that the sun is inherently motionless and the earth movable.

With regard to this argument, I think in the first place that it is very pious to say and prudent to affirm that the holy Bible can never speak untruth—whenever its true meaning is understood. But I believe nobody will deny that it is often very obscure, and may say things which are quite different from what its bare words signify. Hence in expounding the Bible if one were always to confine oneself to the unadorned grammatical meaning, one might fall into error. Not only contradictions and propositions far from true might thus be made to appear in the Bible, but even grave heresies and follies. . . . These propositions uttered by the Holy Ghost were set down in the Bible by the sacred scribes in a manner that would accommodate them to the capacities of the common people, who are rude and unlearned. For the sake of those who deserve to be separated from the herd, it is necessary that wise expositors should produce the true senses of such passages.

Source Information: In 1615, Galileo Galilei wrote a letter to the Grand Duchess Christina, the widow of the grand duke of Tuscany, who had chosen Galileo to be a professor of mathematics at the University of Pisa in 1588. Galileo was coming under increasing criticism from some church leaders for favoring the Copernican system of a sun-centered universe. The Duchess was interested in and supportive of his ideas. In his letter, Galileo makes his case for why the Catholic Church should not oppose his new ideas about the

motions of the Earth and other planets, or his other scientific findings. This excerpt is adapted from Galileo's letter and is quoted in *Magic, Science, and Religion from Plato to Voltaire*, the syllabus for a course taught by Deena Klepper, Boston University.

Document 2: A Primary Source

First, I say that it seems to me that Your Reverence and Galileo were prudent not to speak absolutely, but to speak hypothetically, as I have always believed that Copernicus spoke. To say as he did that by assuming the earth moves and the sun stands still, all astronomical observations are accounted for better than with eccentrics and epicycles, is to speak well. There is no danger in this, and it is sufficient for mathematicians. But to want to affirm that the sun really is fixed in the center of the heavens and only revolves around itself (i.e., turns upon its axis) without traveling from east to west, and that the earth is situated in the third sphere and revolves with great speed around the sun, is a very dangerous thing. Not only does it irritate all the philosophers and scholastic theologians, but it also injures our holy faith and renders the Holy Scriptures false.

Second. I say that, as you know, the Council of Trent prohibits expounding the Scriptures contrary to the common agreement of the holy Fathers. And if Your Reverence would read not only the Fathers but also the commentaries of modern writers on Genesis, Psalms, Ecclesiastes and Josue, you would find that all agree in explaining that the sun is in the heavens and moves swiftly around the earth, and that the earth is far from the heavens and stands immobile in the center of the universe.

Source Information: Paolo Antonio Foscarini (1565–1616) was a monk and a professor of theology and philosophy. He wrote a book defending the idea of a moving Earth. It was condemned by the church's Inquisition in 1616, along with works by Galileo and Copernicus. In 1615, Foscarini had defended Galileo's ideas openly. Cardinal Robert Bellarmine responded to him in a letter dated April 12, 1615. Document 2 is a shortened and adapted excerpt from that letter. In speaking of "eccentrics and epicycles," Bellarmine is referring to parts of Ptolemy's complex earth-centered solar system. The entire letter is quoted on the website *Galileo and St. Bellarmine*, edited by Robert G. Brown, Duke University, 2007.

Assessment Questions

1. Galileo does not accept Bellarmine's idea about how to read and understand the Bible. What idea does Galileo not accept, and why is this matter important to him?
2. What emotional tone or mood does each document express? How would you explain this difference in the way each author expresses his views?

Assessment 6 *Advanced Level*

Galileo and Cardinal Bellarmine

★ Craft and Structure

- 6. (9–10)** Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.
- 6. (11–12)** Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.

★ Using This Assessment

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Assessment 6 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 6 for grades 9–10 and 11–12 combined. It asks students to note a text's point of view as expressed by looking closely at details in the text itself. These details may take the form of emotional language, distorted or exaggerated descriptions, stereotyped labeling, etc. However, even a text with a neutral tone may express bias or point of view by selectively emphasizing some facts while omitting others. Therefore, students also need to go outside the text to interpret point of view by considering sourcing information such as the author's background, purpose, and audience. In addition, students need to see that when sources express conflicting points of view they may still be reliable in certain ways—for example, by what they share in common or by backing up their claims with solid evidence.

★ Evaluating Student Responses to This Assessment

Acceptable answers to the first assessment question should note that Bellarmine praises both Copernicus and Galileo as prudent, but only if they treat their theories “hypothetically,” not “absolutely.” He means by this that they may use the sun-centered theory to explain astronomical observations “mathematically” as long as they don't claim that the sun actually is fixed in space and that the Earth actually does move around it. Galileo clearly does mean things this way—or “absolutely,” as Bellarmine puts it. Acceptable answers to the second assessment question should note that Bellarmine insists the Bible's meaning is determined by the “common agreement of the holy Fathers,” and these authorities all agree the Bible does say the sun moves around an Earth that is immobile. Galileo accepts that the words in the Bible say this, literally. However, he believes the Bible's language simplifies many obscure concepts for “the common people.” The educated can handle the “true senses of such passages,” which can differ from the literal meaning. Hence, authorities should see that his sun-centered system does agree with the Bible's true meaning, an understanding of the Bible he is happy to limit to those “who deserve to be separated from the herd.”

Galileo and Cardinal Bellarmine

Directions: This exercise asks you to read two primary source documents carefully and answer questions about specific details in them. In order to better understand these documents as historical primary sources, read and make use of the source information located just below each document. When you have studied the documents and the source information, answer the two assessment questions that follow.

CCS Standard 6: (9–10) Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.

(11–12) Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.

Document 1: A Primary Source

Some years ago, as Your Serene Highness well knows, I discovered in the heavens many things that had not been seen before our own age. The novelty of these things, as well as some consequences which followed from them in contradiction to the physical notions commonly held among academic philosophers, stirred up against me no small number of professors—as if I had placed these things in the sky with my own hands in order to upset nature and overturn the sciences. They seemed to forget that the increase of known truths stimulates the investigation, establishment, and growth of the arts; not their diminution or destruction.

Showing a greater fondness for their own opinions than for truth they sought to deny and disprove the new things which, if they had cared to look for themselves, their own senses would have demonstrated to them. To this end they hurled various charges and published numerous writings filled with vain arguments. . . . The reason they condemned the opinion that the earth moves and the sun stands still is that in many places in the Bible one may read that the sun moves and the earth stands still. Since the Bible cannot err, it follows that anyone takes an erroneous and heretical position who maintains that the sun is inherently motionless and the earth movable.

With regard to this argument, I think in the first place that it is very pious to say and prudent to affirm that the holy Bible can never speak untruth—whenever its true meaning is understood. But I believe nobody will deny that it is often very obscure, and may say things which are quite different from what its bare words signify. Hence in expounding the Bible if one were always to confine oneself to the unadorned grammatical meaning, one might fall into error. Not only contradictions and propositions far from true might thus be made to appear in the Bible, but even grave heresies and follies. . . . These propositions uttered by the Holy Ghost were set down in the Bible by the sacred scribes in a manner that would accommodate them to the capacities of the common people, who are rude and unlearned. For the sake of those who deserve to be separated from the herd, it is necessary that wise expositors should produce the true senses of such passages.

Source Information: In 1615, Galileo Galilei wrote a letter to the Grand Duchess Christina, the widow of the grand duke of Tuscany, who had chosen Galileo to be a professor of mathematics at the University of Pisa in 1588. Galileo was coming under increasing criticism from some church leaders for favoring the

Copernican system of a sun-centered universe. The Duchess was interested in and supportive of his ideas. In his letter, Galileo makes his case for why the Catholic Church should not oppose his new ideas about the motions of the Earth and other planets, or his other scientific findings. This excerpt is adapted from Galileo's letter and is quoted in *Magic, Science, and Religion from Plato to Voltaire*, the syllabus for a course taught by Deena Klepper, Boston University.

Document 2: A Primary Source

First, I say that it seems to me that Your Reverence and Galileo were prudent not to speak absolutely, but to speak hypothetically, as I have always believed that Copernicus spoke. To say as he did that by assuming the earth moves and the sun stands still, all astronomical observations are accounted for better than with eccentrics and epicycles, is to speak well. There is no danger in this, and it is sufficient for mathematicians. But to want to affirm that the sun really is fixed in the center of the heavens and only revolves around itself (i.e., turns upon its axis) without traveling from east to west, and that the earth is situated in the third sphere and revolves with great speed around the sun, is a very dangerous thing. Not only does it irritate all the philosophers and scholastic theologians, but it also injures our holy faith and renders the Holy Scriptures false.

Second. I say that, as you know, the Council of Trent prohibits expounding the Scriptures contrary to the common agreement of the holy Fathers. And if Your Reverence would read not only the Fathers but also the commentaries of modern writers on Genesis, Psalms, Ecclesiastes and Josue, you would find that all agree in explaining that the sun is in the heavens and moves swiftly around the earth, and that the earth is far from the heavens and stands immobile in the center of the universe.

Source Information: Paolo Antonio Foscarini (1565–1616) was a monk and a professor of theology and philosophy. He wrote a book defending the idea of a moving Earth. It was condemned by the church's Inquisition in 1616, along with works by Galileo and Copernicus. In 1615, Foscarini had defended Galileo's ideas openly. Cardinal Robert Bellarmine responded to him in a letter dated April 12, 1615. Document 2 is a shortened and adapted excerpt from that letter. In speaking of "eccentrics and epicycles," Bellarmine is referring to parts of Ptolemy's complex earth-centered solar system. The entire letter is quoted on the website *Galileo and St. Bellarmine*, edited by Robert G. Brown, Duke University, 2007.

Assessment Questions

1. Galileo (Document 1) felt his discoveries confirmed Copernicus's theory. Bellarmine (Document 2) also speaks positively about Copernicus. Yet Galileo could not agree with Bellarmine's view about Copernicus? How do the two documents make that clear?
2. Methods of Biblical interpretation were central to the clash between Galileo and his church opponents. How do both documents together illustrate why that was so?

Assessment 7 *Basic Level*

The Geocentric Universe

★ *Integration of Knowledge and Ideas*

- 7. (6–8)** Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

★ *Using This Assessment*

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Assessment 7 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 7 for grades 6–8. It asks students to do something historians must do all the time—integrate evidence found in several primary sources presented in a variety of visual and textual formats.

★ *Evaluating Student Responses to This Assessment*

Acceptable answers to the first assessment question should note that the idea that the Earth was the unmoving center of the universe was accepted as obvious in Europe for centuries. Document 1, a secondary source, indicates that Copernicus was able to show “mathematically” that the Earth could be a planet circling an unmoving sun, along with all the other planets. Document 2 depicts this graphically, showing the sun at the center of a universe made up of the circular orbits of the planets, including Earth. In Document 3, Copernicus himself describes the Earth as moving in an orbit like the other planets, while “at rest, however, in the middle of everything is the sun.” Acceptable answers to the second assessment question should note that Documents 1 and 2 included the “epicycles” also used in Ptolemy’s ancient system. Along with the source information, these documents both show that Copernicus never gave up the traditional idea of perfectly circular motion for the planets. Hence, he had to retain some epicycles in his system. In Document 3, Copernicus does not mention epicycles or circular orbits, but best answers may note his poetic language and his admiration for what he calls the “marvelous symmetry of the universe.” These suggest a traditional religious sense of the orderly arrangement of the universe.

The Geocentric Universe

Directions: This exercise asks you to study three documents carefully and answer two questions focused on what these sources have in common. In order to better understand the documents and their importance as historical evidence, read and make use of the source information located just below or next to each document itself. When you have studied the documents and the source information, answer the assessment questions that follow.

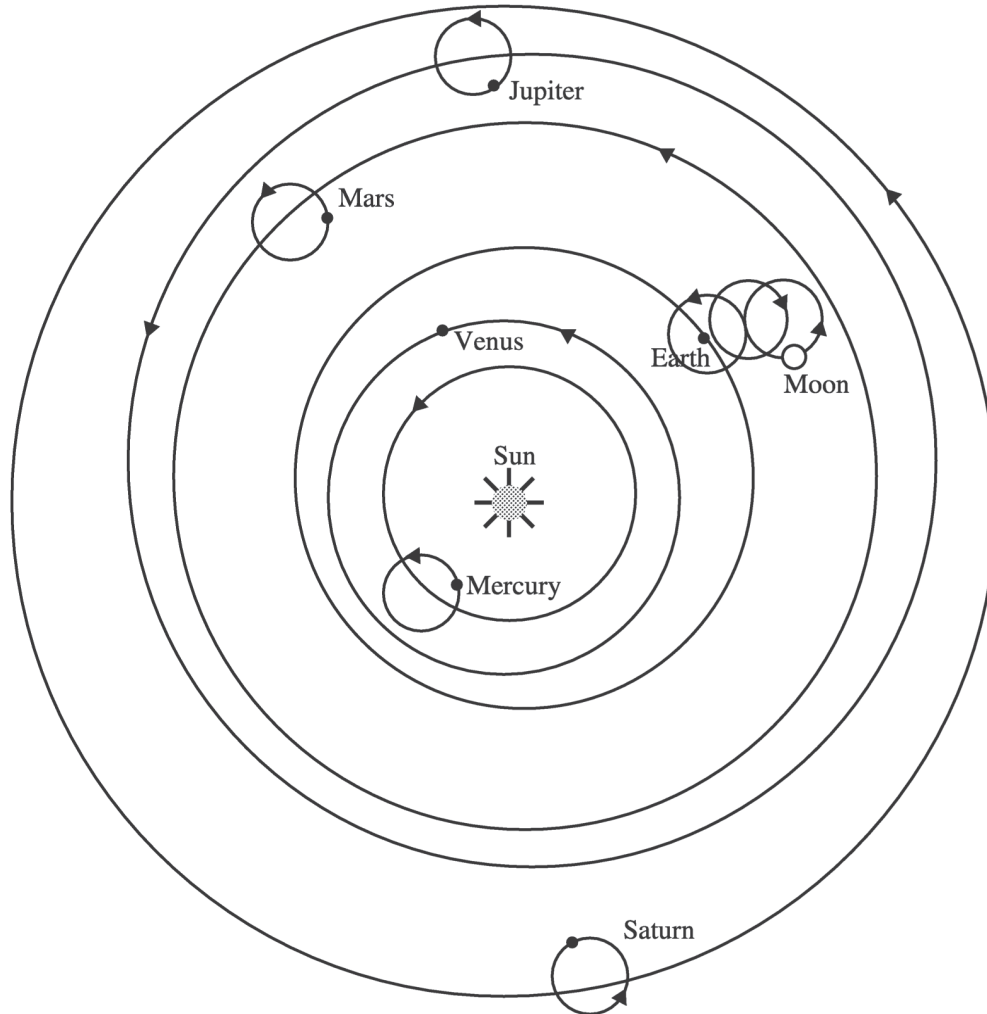
CCS Standard 7: Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.

Document 1: A Secondary Source

In 1543 a Polish mathematician named Nicolaus Copernicus wrote a book called “On the Revolutions of the Heavenly Bodies” in which he proposed a new idea: that the universe was heliocentric (sun-centered) rather than geocentric (earth-centered). He worked out a mathematical system in which the Earth and planets revolved around the sun in circular orbits, though the moon still revolved around the Earth. Copernicus’ system was simpler than Ptolemy’s, but it did not conform exactly to the observed movement of the sun and planets. In order to make his theory fit the observations, Copernicus had to add 34 epicycles to his system, making it almost as complicated as Ptolemy’s. What Copernicus did not realize was that the planets actually revolve around the sun in elliptical (oval-shaped) orbits, not circular orbits; if he had known this, his system would not have needed any epicycles.

Source Information: This passage is a secondary source document describing the theory of the heavens presented by Nicolaus Copernicus. The document is from *Galileo* by Katharine B. Ward (Culver City, CA: Interact, 1991).

Document 2: A Visual Secondary Source



The Copernican System

Source Information: This diagram illustrates Copernicus's idea of the universe. It shows the sun at the center, with the Earth and other planets rotating around it. The planets also move in "epicycles," the smaller circles connected to their orbits. Copernicus altered Ptolemy's ancient system by putting the sun at the center. But he held to the idea of perfect circular motion in the heavens. For that reason, he still needed a few epicycles to account for the planetary motions that could actually be observed. The document is from *Galileo* by Katherine B. Ward (Culver City, CA: Interact, 1991).

Document 3: A Written Primary Source

(The sphere of the fixed stars) is followed by the first of the planets, Saturn, which completes its circuit in 30 years. After Saturn, Jupiter accomplishes its revolution in 12 years. Then Mars revolves in 2 years. The annual revolution in the fourth place contains the earth, together with the lunar sphere as an epicycle. In the fifth place, Venus returns in 9 months. Lastly, the sixth place is held by Mercury, which revolves in a period of 80 days.

At rest, however, in the middle of everything is the sun. For in this most beautiful temple, who would place this lamp in another or better position than that from which it can light up the whole thing at the same time? For, the sun is not inappropriately called by some people the lantern of the universe, its mind by others, and its ruler by still others. Hermes labels it a visible god, and Sophocles' *Electra* calls it the all-seeing. Thus indeed, as though seated on a royal throne, the sun governs the family of planets revolving around it.

In this arrangement, therefore, we discover a marvelous symmetry of the universe, and an established harmonious linkage between the motion of the spheres and their size, such as can be found in no other way.

Source Information: This document is a shortened and adapted excerpt from *On the Revolutions of the Heavenly Bodies* by Nicolaus Copernicus. It was published in 1543. It appears on the Johann Friedrich and the Emergence of Scientific Anthropology Research Website, a PhD dissertation by Roger Brisson, Rijksuniversiteit Groningen, 2008.

Assessment Questions

1. Consider this statement. "Nicolaus Copernicus completely upset traditional teachings about the nature of the universe and Earth's place in it." How do all three documents support this claim? Cite details from the documents.

2. In what way do these three documents also show that Copernicus still held onto some older teachings about the planets, the sun, and Earth's place in the universe? Cite details from the documents.

Assessment 7 *Advanced Level*

The Geocentric Universe

★ *Integration of Knowledge and Ideas*

- 7. (9–10)** Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.
- 7. (11–12)** Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.

★ *Using This Assessment*

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Assessment 7 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 7 for grades 9–10 and 11–12 combined. It asks students to do something historians must do all the time—integrate evidence found in a wide variety of primary sources presented in many visual and textual formats. It also asks them to judge the relative strengths and weaknesses of visual as compared with written sources.

★ *Evaluating Student Responses to This Assessment*

Acceptable answers to the first assessment question should note how all three documents show the sun at the center of the universe, the central revolutionary idea in Copernicus's system. Document 1 indicates that Copernicus was able to show "mathematically" that the Earth could be a planet circling an unmoving sun. Document 2 depicts this graphically, showing the sun at the center of a universe made up of the circular orbits of the planets, including Earth. In Document 3, Copernicus himself describes the Earth as moving in an orbit like the other planets around an unmoving sun. At the same time, Documents 1 and 2 include the "epicycles" also used in Ptolemy's ancient system. Copernicus needed these because he still assumed, as Ptolemy did, perfectly circular motion for the planets. In Document 3, Copernicus does not specifically mention epicycles, but his poetic language and his admiration for what he calls the "marvelous symmetry of the universe," suggest a traditional religious sense of its orderly arrangement. Answers to the second assessment question may vary. Answers should say that the documents, taken together, show how the traditional view fit with and reinforced strongly held religious beliefs about the kind of orderly universe God supposedly had created.

The Geocentric Universe

Directions: This exercise asks you to study three documents carefully and answer two questions focused on what these sources have in common. In order to better understand the documents and their importance as historical evidence, read and make use of the source information located just below or next to each document itself. When you have studied the documents and the source information, answer the assessment questions that follow.

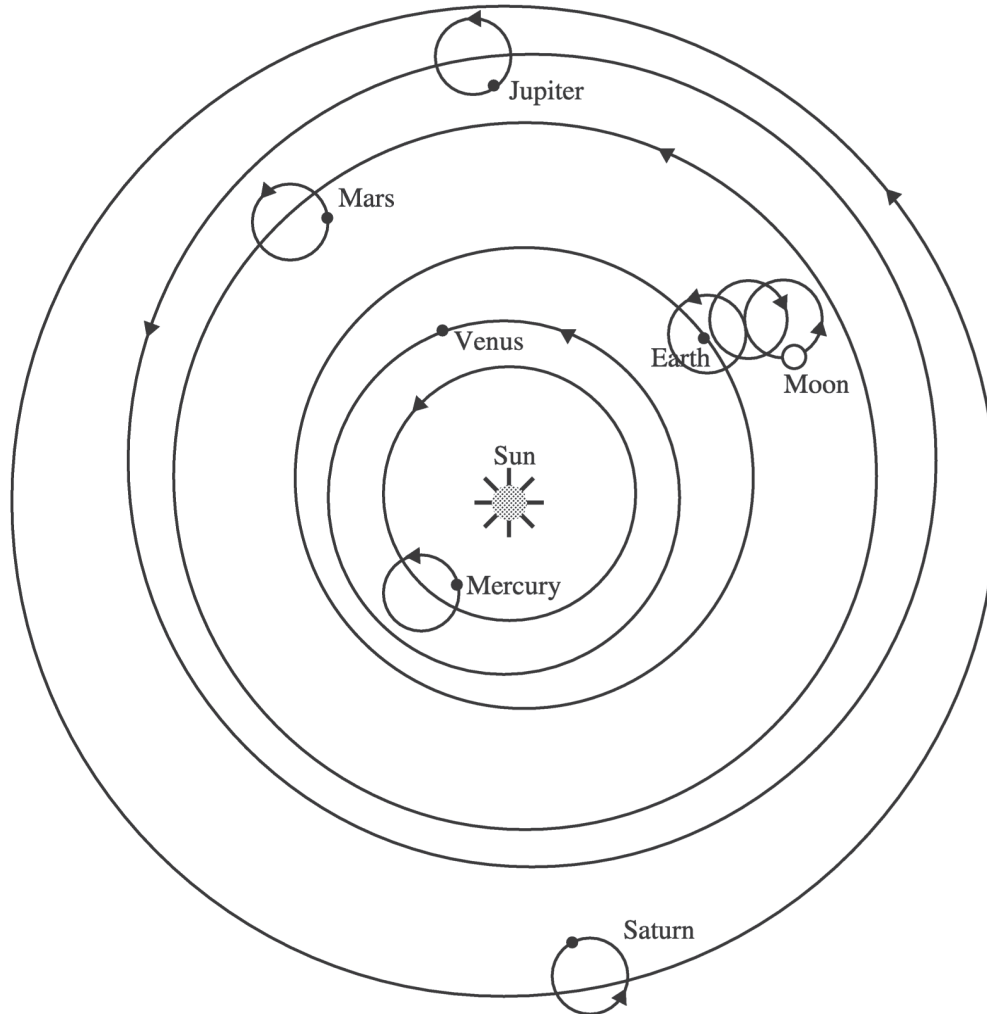
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Source Information: This diagram illustrates Copernicus's idea of the universe. It shows the sun at the center, with the Earth and other planets rotating around it. The planets also move in "epicycles," the smaller circles connected to their orbits. Copernicus altered Ptolemy's ancient system by putting the sun at the center. But he held to the idea of perfect circular motion in the heavens. For that reason, he still needed a few epicycles to account for the planetary motions that could actually be observed. The document is from *Galileo* by Katherine B. Ward (Culver City, CA: Interact, 1991).

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(The sphere of the fixed stars) is followed by the first of the planets, Saturn, which completes its circuit in 30 years. After Saturn, Jupiter accomplishes its revolution in 12 years. Then Mars revolves in 2 years. The annual revolution in the fourth place contains the earth, together with the lunar sphere as an epicycle. In the fifth place, Venus returns in 9 months. Lastly, the sixth place is held by Mercury, which revolves in a period of 80 days.

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Assessment Questions

1. Consider this statement. "Copernicus was a revolutionary who overturned traditional teachings. Yet he remained a traditionalist in his views in many ways." How do all three documents support this claim? Cite details from the documents.
2. How do these documents help you better understand why the sun-centered theory caused such deep anxiety among many thinkers in Europe in Copernicus's time?

Assessment 8 *Basic Level***Nicolas de Condorcet**★ *Integration of Knowledge and Ideas*

- 8. (6–8)** Distinguish among fact, opinion, and reasoned judgment in a text.

★ *Using This Assessment*

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Assessment 8 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 8 for grades 6–8. It asks students to pay attention to the way a text reasons about its factual claims and to distinguish between these and expressions of opinion. This could mean paying close attention to the factual evidence offered or to the reasoning process and logic used to support a claim—as well as an ability to distinguish these from the text's biases or expressions of opinion. This activity assesses the students' ability to read closely in order to understand a text in these ways.

★ *Evaluating Student Responses to This Assessment*

Responses to the first assessment question should see that Condorcet believes that “no bounds have been fixed to the improvement of the human faculties.” Answers should note the extreme or maximal nature of the rhetoric Condorcet uses—“perfectibility,” “absolutely indefinite,” “one of the grand revolutions of the human race,” etc. His optimism appears to be mainly about the growth and spread of knowledge and new ideas. However, best answers will note that although his optimism is extreme, his language is quite vague and abstract. He speaks of limitless “improvement of the human faculties,” but does not detail what those faculties are or what they will accomplish. Answers to the second assessment question may vary. Some will find Condorcet's notion of “perfectibility” an admirable ideal to strive for. Others may see it as unrealistic or even arrogant. Some may also note that Condorcet tempers his optimism with concerns about continuing dangers from “new errors” in thinking, “corruption,” “ignorance,” “enthusiasm,” etc. His hope is that his history of the progress of the human mind will alert people to the dangers that might impede that progress.

Nicolas de Condorcet

Directions: This exercise asks you to read one primary source document carefully and answer two questions about specific details in the document. In order to better understand the document as a historical primary source, read and make use of the source information located just below the document itself. When you have studied the document and the source information, answer the assessment questions that follow.

CCS Standard 8: Distinguish among fact, opinion, and reasoned judgment in a text.

A Primary Source Document

The result of the work I have undertaken here will be to show, from reasoning and from facts, that no bounds have been fixed to the improvement of the human faculties; that the perfectibility of man is absolutely indefinite; that the progress of this perfectibility, henceforth above the control of every power that would impede it, has no other limit than the duration of the globe upon which nature has placed us. The course of this progress may doubtless be more or less rapid, but it can never be reversed; at least while the earth retains its place in the universe, and the laws of nature neither effect upon the globe a general overthrow, nor introduce such changes as would no longer permit the human race to preserve and exercise the same faculties, and find the same resources.

Yet we are not arrived at the point when there is no longer anything to fear, either from new errors, or the return of old ones; when no corrupt institution can be introduced by hypocrisy, and adopted by ignorance or enthusiasm; when no vicious combination can cause the misery of a great people. Accordingly would it not be of advantage to know how nations have been deceived, corrupted, and plunged in misery?

Everything tells us that we are approaching the era of one of the grand revolutions of the human race. What can better enlighten us to what we may expect, what can be a surer guide to us, amidst its commotions, than the picture of the revolutions that have preceded and prepared the way for it? The present state of knowledge assures us that it will be happy. But is it not upon condition that we know how to assist it with all our strength? And, that the happiness it promises may be less dearly bought, that it may spread with more rapidity over a greater space, that it may be more complete in its effects, is it not requisite to study, in the history of the human mind, what obstacles remain to be feared, and by what means those obstacles are to be surmounted?

Source Information: The European Enlightenment was an intellectual movement that celebrated science and the use of reason to overcome tradition and reform society. Nicolas de Condorcet was a French philosopher and a major figure of the Enlightenment. This document is adapted from some excerpts from the Introduction to *Outlines of an Historical View of the Progress of the Human Mind* by Nicolas de Condorcet (Philadelphia, 1796).

Assessment 8 *Advanced Level*

Nicolas de Condorcet

★ *Integration of Knowledge and Ideas*

- 8. (9–10) Assess the extent to which the reasoning and evidence in a text support the author's claims.
- 8. (11–12) Evaluate an author's premises, claims, and evidence by corroborating or challenging them with other information.

★ *Using This Assessment*

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Assessment 8 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 8 for grades 9–10 and 11–12 combined. It asks students to pay attention to the way a text backs up or seeks to explain its factual claims. This could mean paying close attention to the factual evidence offered in the text as compared with expressions of opinion. Or it could mean attention to the reasoning process and logic used to support a claim. It may also require students to examine underlying assumptions and bias in order to see how they shape or distort the reasoning process presented by the text. This activity assesses the students' ability to read closely in order to understand a text in these ways.

★ *Evaluating Student Responses to This Assessment*

Responses to the first assessment question should see that Condorcet bases his optimism on the assumption of man's "perfectibility," a sense that no limits exist to the progress humanity can make. As to what exactly is perfectible in man, Condorcet is somewhat abstract and vague. He seems mainly to see it as the growth and spread of knowledge and new ideas. As to society, he may see it as perfectible, as well, yet he also fears society could thwart the progress he is hoping for. He says, "no bounds have been fixed to the improvement of the human faculties," but he still worries about "corrupt institutions" and ignorance thwarting progress. Hence, there is a need "to know how nations have been deceived, corrupted, and plunged in misery." Answers to the second assessment question may vary. Some may stress the thousands of improvements in life that have flowed from progress in science and technology since Condorcet's time. Others may stress the wars and other forms of misery people have since suffered as calling into question his faith in humanity's "perfectibility."

Nicolas de Condorcet

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CCS Standard 8: (9–10) Assess the extent to which the reasoning and evidence in a text support the author’s claims. **(11–12)** Evaluate an author’s premises, claims, and evidence by corroborating or challenging them with other information.

A Primary Source Document

The result of the work I have undertaken here will be to show, from reasoning and from facts, that no bounds have been fixed to the improvement of the human faculties; that the perfectibility of man is absolutely indefinite; that the progress of this perfectibility, henceforth above the control of every power that would impede it, has no other limit than the duration of the globe upon which nature has placed us. The course of this progress may doubtless be more or less rapid, but it can never be reversed; at least while the earth retains its place in the universe, and the laws of nature neither effect upon the globe a general overthrow, nor introduce such changes as would no longer permit the human race to preserve and exercise the same faculties, and find the same resources.

Yet we are not arrived at the point when there is no longer anything to fear, either from new errors, or the return of old ones; when no corrupt institution can be introduced by hypocrisy, and adopted by ignorance or enthusiasm; when no vicious combination can cause the misery of a great people. Accordingly would it not be of advantage to know how nations have been deceived, corrupted, and plunged in misery?

Everything tells us that we are approaching the era of one of the grand revolutions of the human race. What can better enlighten us to what we may expect, what can be a surer guide to us, amidst its commotions, than the picture of the revolutions that have preceded and prepared the way for it? The present state of knowledge assures us that it will be happy. But is it not upon condition that we know how to assist it with all our strength? And, that the happiness it promises may be less dearly bought, that it may spread with more rapidity over a greater space, that it may be more complete in its effects, is it not requisite to study, in the history of the human mind, what obstacles remain to be feared, and by what means those obstacles are to be surmounted?

Source Information: The European Enlightenment was an intellectual movement that celebrated science and the use of reason to overcome tradition and reform society. Nicolas de Condorcet was a French philosopher and a major figure of the Enlightenment. This document is adapted from some excerpts from the Introduction to *Outlines of an Historical View of the Progress of the Human Mind* by Nicolas de Condorcet (Philadelphia, 1796).

Assessment 9 *Basic Level*

Newton's Laws of Motion

★ *Integration of Knowledge and Ideas*

- 9. (6–8)** Analyze the relationship between a primary and secondary source on the same topic.

★ *Using This Assessment*

These Common Core History Assessments are intended to help your students develop key literacy and history thinking skills as they study and master the content covered in their world history coursework. The assessments are intended to be *formative* more than *summative*. That is, they are meant to be part of the instructional process itself, providing you and your students with information at a point when timely adjustments in teaching and learning can be made.

Assessment 9 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 9 for grades 6–8. It asks students to understand the relationship between primary and secondary sources. This means students must know the difference between the two kinds of sources—that primary sources provide the evidence for secondary source claims and interpretations. This should lead them to adopt a critical approach to secondary sources themselves. That is, such secondary accounts should not be regarded as final and complete. They are interpretations of the past, not the past itself. Students should learn to weigh secondary source accounts against the relevant primary source evidence.

★ *Evaluating Student Responses to This Assessment*

Answers to the assessment question should note that, as to the Scientific Revolution itself, Document 2 explains how Newton's laws unified the ideas of Copernicus and Galileo about the movements of bodies in space and the motions of bodies on Earth. In a sense, Newton brought together the Earth and the heavens and made it clear that the same physical laws applied throughout the universe. As to the impact on society and its thinking in general, Document 2 suggests that Newton provided the basis for a more general view of the universe as a giant machine. Moreover, it was a machine that human reason could fully understand in time and even control in increasingly effective ways.

Newton's Laws of Motion

Directions: This exercise asks you to read two documents carefully and answer one question about specific details in them. One document is a primary source and the other is a secondary source. In order to better understand the documents, read and make use of the source information located just below each document. When you have studied the documents and the source information, answer the assessment question that follows.

CCS Standard 9: Analyze the relationship between a primary and secondary source on the same topic.

Document 1: A Primary Source

Law 1: Every body continues in its state of rest, or of uniform motion in a right line, unless it is compelled to change that state by forces impressed upon it.

Law 2: The change of motion is proportional to the motive force impressed; and is made in the direction of the right line in which that force is impressed.

Law 3: To every action there is always opposed an equal reaction: or, the mutual actions of two bodies upon each other are always equal, and directed to contrary parts.

Source Information: Isaac Newton's *Principia Mathematica* ("Mathematical Principles of Natural Philosophy"), 1687, was in many ways the crowning achievement of the Scientific Revolution of the sixteenth and seventeenth centuries. In the preface to that work, Newton summarized and explained his three laws of motion. This document provides his most basic statement of those three laws. The preface containing these statements is quoted in *The Enlightenment*, syllabus for a course taught by Frank Luttmer, Hanover College.

Document 2: A Secondary Source

The scientific revolution began with ideas about the planets, the stars, and Earth's place in the heavens. In Europe's Middle Ages, it was believed that God created the universe as a home for man, and therefore that Earth must naturally be at its center. Greek Egyptian scientist Ptolemy's Earth-centered universe was accepted by nearly all. In the early 1500s, Polish astronomer Nicolaus Copernicus upset this comforting view by proposing that Earth, like the other planets, revolves around the sun. In the early 1600s, Galileo Galilei convinced many that Copernicus was right. With his telescope, Galileo reported seeing mountains on the moon and other moons around Jupiter. This suggested that the planets were ordinary matter like the Earth, not the perfect spheres of light previously imagined. Galileo's main research for years was into the laws of motion describing the behavior of objects on Earth.

Copernicus and Galileo set the stage for the Scientific Revolution, which reached its high point with English physicist Isaac Newton. In 1687, Newton published his "Mathematical Principles of Natural Philosophy," or the "Principia." In it, Newton worked out fully the problems posed by Copernicus, Galileo, and many others. He did this by describing the basic laws of all matter and motion, both on Earth as well as in outer space. Newton pictured the universe as a giant machine ruled by simple and sweeping general laws. Moreover, he inspired others to see that these laws could be discovered by human reason and experimentation. Out of Newton's work came a view of the natural world as more impersonal and mechanistic, but also as more knowable and controllable.

Source Information: This secondary source discusses the Scientific Revolution and Isaac Newton's central place in it. The document is from "Science and the Universe," Lesson 1 in *Science, Technology, and the Enlightenment* by Jonathan Burack (Culver City, CA: MindSparks, 2009).

Assessment Question

Consider this statement: "Newton's three laws were the crowning achievement of the Scientific Revolution itself; they were also central to understanding its impact on ideas in society in general." How does Document 2 help to support this statement?

Assessment 9 *Advanced Level*

Newton's Laws of Motion

★ *Integration of Knowledge and Ideas*

- 9. (9–10)** Compare and contrast treatments of the same topic in several primary and secondary sources.
- 9. (11–12)** Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.

★ *Using This Assessment*

These Common Core History Assessments are intended to help your students develop key literacy and history thinking skills as they study and master the content covered in their world history coursework. The assessments are intended to be *formative* more than *summative*. That is, they are meant to be part of the instructional process itself, providing you and your students with information at a point when timely adjustments in teaching and learning can be made.

Assessment 9 is designed to measure students' ability to master the skills described in Common Core History/Social Studies Reading Standard 9 for grades 9–10 and 11–12 combined. It asks students to understand the relationship between primary and secondary sources. This means students must know the difference between the two kinds of sources—that primary sources provide the evidence for secondary source claims and interpretations. This should lead them to adopt a critical approach to secondary sources themselves. That is, such secondary accounts should not be regarded as final and complete. They are interpretations of the past, not the past itself. Students should learn to weigh secondary source accounts against the relevant primary source evidence.

★ *Evaluating Student Responses to This Assessment*

Answers to the first assessment question could note that, as to the Scientific Revolution itself, Newton's laws are stated in the most general or universal way—as applying to all bodies at rest or in motion. Document 2 explains how these universal laws unified the ideas of Copernicus and Galileo about the movements of bodies in space and the motions of bodies on Earth. In a sense, Newton brought together the Earth and the heavens and made it clear that the same physical laws applied throughout the universe. As to the impact on society and its thinking in general, Document 2 suggests that Newton provided the basis for a new view of the universe as a giant machine, a machine that human reason could fully understand in time and even control in increasingly effective ways. Answers to the second assessment question may vary. Some may see Newton's approach, based on careful observation and measurement, as one which should be the ideal for all quests for knowledge. Others may feel that not all aspects of reality, human in particular, will lead to the broad, abstract set of general laws such as those Newton fashioned. In biology, for example, it may be just as important to base knowledge on experimentation and the careful description of the unique features of various living things. There is much room for debate here, which should be encouraged.

Newton's Laws of Motion

Directions: This exercise asks you to read two documents carefully and answer two questions about specific details in them. One document is a primary source and the other is a secondary source. In order to better understand the documents, read and make use of the source information located just below each document. When you have studied the documents and the source information, answer the assessment questions that follow.

CCS Standard 9: (9–10) Compare and contrast treatments of the same topic in several primary and secondary sources. **(11–12)** Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.

Document 1: A Primary Source

Law 1: Every body continues in its state of rest, or of uniform motion in a right line, unless it is compelled to change that state by forces impressed upon it.

Law 2: The change of motion is proportional to the motive force impressed; and is made in the direction of the right line in which that force is impressed.

Law 3: To every action there is always opposed an equal reaction: or, the mutual actions of two bodies upon each other are always equal, and directed to contrary parts.

Source Information: Isaac Newton's *Principia Mathematica* (*Mathematical Principles of Natural Philosophy*), 1687, was in many ways the crowning achievement of the Scientific Revolution of the sixteenth and seventeenth centuries. In the preface to that work, Newton summarized and explained his three laws of motion. This document provides his most basic statement of those three laws. The preface containing these statements is quoted in *The Enlightenment*, the syllabus for a course taught by Frank Luttmer, Hanover College.

Document 2: A Secondary Source

The scientific revolution began with ideas about the planets, the stars, and Earth's place in the heavens. In Europe's Middle Ages, it was believed that God created the universe as a home for man, and therefore that Earth must naturally be at its center. Greek Egyptian scientist Ptolemy's Earth-centered universe was accepted by nearly all. In the early 1500s, Polish astronomer Nicolaus Copernicus upset this comforting view by proposing that Earth, like the other planets, revolves around the sun. In the early 1600s, Galileo Galilei convinced many that Copernicus was right. With his telescope, Galileo reported seeing mountains on the moon and other moons around Jupiter. This suggested that the planets were ordinary matter like the Earth, not the perfect spheres of light previously imagined. Galileo's main research for years was into the laws of motion describing the behavior of objects on Earth.

Copernicus and Galileo set the stage for the Scientific Revolution, which reached its high point with English physicist Isaac Newton. In 1687, Newton published his "Mathematical Principles of Natural Philosophy," or the "Principia." In it, Newton worked out fully the problems posed by Copernicus, Galileo, and many others. He did this by describing the basic laws of all matter and motion, both on Earth as well as in outer space. Newton pictured the universe as a giant machine ruled by simple and sweeping general laws. Moreover, he inspired others to see that these laws could be discovered by human reason and experimentation. Out of Newton's work came a view of the natural world as more impersonal and mechanistic, but also as more knowable and controllable.

Source Information: This secondary source discusses the Scientific Revolution and Isaac Newton's central place in it. The document is from "Science and the Universe," Lesson 1 in *Science, Technology, and the Enlightenment* by Jonathan Burack (Culver City, CA: MindSparks, 2009).

Assessment Questions

1. Many historians see Newton's *Principia* as the crowning achievement of the Scientific Revolution and its impact on society. How do these documents support that way of looking at Newton's achievement? Cite details from the documents to support your answer.

2. Some key thinkers of the European Enlightenment saw Newton's achievement as a model for all future quests for knowledge about society as well as science. Do you think they were right to see things that way? Why or why not?

Writing Assessment 1

The Scientific Revolution

★ *The College and Career Readiness Anchor Standard for Writing*

1. Write arguments to support claims in an analysis of substantive topics or texts using valid reasoning and relevant and sufficient evidence.

This standard is the basis for the corresponding No. 1 Common Core Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects.

★ *Using This Assessment*

These Common Core History Assessments are intended to help your students develop key literacy and history thinking skills as they study and master the content covered in their world history coursework. The assessments are intended to be *formative* more than *summative*. That is, they are meant to be part of the instructional process itself, providing you and your students with information at a point when timely adjustments in teaching and learning can be made.

Writing Assessment 1 is designed to measure students' ability to master the skills described in the College and Career Readiness Anchor Standard for Writing 1. The Anchor Standards are the basis on which the various Common Core History/Social Studies Standards are based. This assessment asks students to write an essay that makes meaningful claims and that develops those claims using relevant evidence and sound reasoning. The essay should make clear the strengths and limitations of the claims it makes while also considering possible challenges or counter claims.

★ *Evaluating Student Responses to Writing Assessment 1*

Essays for this assignment should be scored according to these criteria.

- How well does the essay state a claim addressing all elements of the prompt?
- Does the essay use evidence from all or most of the documents assigned for this task?
- Is the evidence explained effectively using careful reasoning and a logical flow of one idea to the next?
- Does the essay defend the claim in relation to any relevant alternative claims?
- Are ideas presented using precise language, effective transitions, and domain-specific vocabulary?
- Does the essay include an effective conclusion supporting its claims?
- How well does the essay follow rules of usage, spelling, and punctuation?

The Scientific Revolution

The Standard: Write a brief essay that presents a well-reasoned argument focused on historical content.

The Question

Using your background history knowledge and the primary source documents listed here, explain why you *do* or *do not* agree with the following statement:

“The Scientific Revolution actually evolved slowly over centuries and so it cannot really be called a revolution at all.”

Documents: Base your essay on your general background knowledge and all of the primary and secondary source documents in *The Scientific Revolution Assessments*.

Instructions

- Write a brief, well-organized essay that includes an introduction, one to three internal paragraphs, and a conclusion.
- Introduce a specific claim that you can defend in response to the question.
- Support your claim with an argument based on evidence from the documents and sound reasoning about that evidence.
- Consider other possible claims that may differ from your own.
- Include related outside information based on your background knowledge of history.
- Use transitions and a logical arrangement of ideas to connect all parts of your essay to the claim you are making.
- Write a conclusion that follows from the argument your essay has made.

Writing Assessment 2

The Scientific Revolution

★ The College and Career Readiness Anchor Standard for Writing

2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

This standard is the basis for the corresponding No. 2 Common Core Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects.

★ Using this Assessment

These Common Core History Assessments are intended to help your students develop key literacy and history thinking skills as they study and master the content covered in their world history coursework. The assessments are intended to be *formative* more than *summative*. That is, they are meant to be part of the instructional process itself, providing you and your students with information at a point when timely adjustments in teaching and learning can be made.

The Scientific Revolution: Writing Assessment 2 is designed to measure students' ability to master the skills described in the College and Career Readiness Anchor Standard for Writing 2. The Anchor Standards are the basis on which the various Common Core History/Social Studies Standards are based. This assessment asks students to write an essay that uses sources effectively to provide strong support and evidence clarifying and explaining a central idea or set of ideas and concepts.

★ Evaluating Student Responses to Writing Assessment 2

Essays for this assignment should be scored according to these criteria.

- How well does the introduction address the prompt with a clear, well-defined central idea and a preview of supporting ideas?
- Does the essay use evidence from many of the documents assigned for this task?
- Is the evidence used effectively to support the essay's key ideas and concepts?
- Does the essay engage in careful reasoning and a logical flow of one idea to the next?
- Are ideas presented using precise language, effective transitions, and domain-specific vocabulary?
- Does the essay include an effective conclusion supporting its key ideas?
- How well does the essay follow rules of usage, spelling, and punctuation?

The Scientific Revolution

The Standard: Write an informative/explanatory essay clearly describing and explaining historical events and trends.

The Question

Ancient Greek philosopher Aristotle believed objects in the heavens were fundamentally different from those on Earth. He said they were made of a pure and perfect substance. He also believed they moved around the Earth in perfectly circular orbits. For centuries in Europe, Aristotle was considered the most important authority with regard to many areas of knowledge. Your task in this assignment is to write an essay explaining how his views as stated here were undermined by the work of Copernicus, Galileo, and Newton in particular, along with others who advanced the Scientific Revolution. Use in a meaningful way as many of the primary source documents for this lesson as you can.

Documents: Base your essay on your general background knowledge and on your selection of sources from all the primary source documents in *The Scientific Revolution Assessments*.

Instructions

- Write a brief, well-organized essay that includes an introduction, one to three internal paragraphs, and a conclusion.
- Introduce the topic with a clear, well-defined central idea and preview in a general way other key ideas your essay will develop.
- Support each of your key ideas with evidence from many of the documents and with sound reasoning about that evidence.
- Include related outside information based on your background knowledge of history.
- Use transitions and a logical arrangement of ideas to connect the major parts of your essay.
- Write a conclusion that follows from and summarizes the main points your essay has made.

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