KEY IDEA  This biography of Nicolaus Copernicus describes his life from his boyhood to his death. Born in 1473 in Poland, Copernicus was a clergyman, a physician, and an astronomer. His conclusion that the planets circle the sun, as opposed to the earth, became one of the foundations of modern astronomy.

LITERACY STANDARDS ADDRESSED IN THIS PLAN

RI.4.1  MAIN FOCUS Key Ideas & Details  
Sessions 1, 2, 3  
Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

RI.4.4  MAIN FOCUS Craft & Structure  
Sessions 2, 3  
Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.

RI.4.7  MAIN FOCUS Integration of Knowledge & Ideas  
Sessions 2, 3  
Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

RI.4.10  Range of Reading & Level of Text Complexity  
By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4-5 text complexity band proficiently, with scaffolding as needed at the high end of the range.

SL.4.3  Comprehension & Collaboration  
Sessions 1, 2, 3  
Identify the reasons and evidence a speaker provides to support particular points.

L.4.4a  Vocabulary Acquisition & Use  
Sessions 1, 2, Additional Instruction  
Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.

L.4.4b  Vocabulary Acquisition & Use  
Additional Instruction  
Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., telegraph, photograph, autograph).

RF.4.3a  Phonics & Word Recognition  
Additional Instruction  
Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.

RF.4.4c  Fluency  
Session 2  
Use context to confirm or self-correct word recognition and understanding, rereading as necessary.

W.4.2  Text Types & Purposes  
Writing Task  
Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

W.4.8*  Research to Build & Present Knowledge  
Sessions 1, 2, 3  
Recall information from experiences or gather information from provided sources to answer a question.  
*standard adapted from another grade level

W.4.10  Range of Writing  
Write routinely over extended time frames and shorter time frames for a range of discipline-specific tasks, purposes, and audiences.
Key Idea: Text Selection Nicolaus Koppernigk grew up in Poland with his sisters and brother. After his parents died, his uncle supported him through school and through university studies, which led to his interest in and study of astronomy.

PREVIEWING THE TEXT 5 minutes
Read the title and author and illustrator names with students. Discuss the front cover and then read the back cover.

Let’s read the title on the front cover and look at the illustration. Who would like to share what they think about the title?

The book is about the person named in the title. Maybe he said that “the earth is a planet.” But everyone knows that.

Long ago, people did not know that the earth is a planet that orbits the sun. What do you see in the illustration that tells you about Nicolaus Copernicus?

The man is probably Copernicus. From his clothes, I think he lived long ago. There are stars in the background, but I don’t know why he has trees on his shoulders or who those other people are.

Let’s read the back cover. What did you learn?

Copernicus was an astronomer, so he must have found out something new about the stars.

READING THE TEXT CLOSELY 10 minutes
Explain the learning focus for students. Then have them read pages 4–7. Check their application of the focus and provide support if needed.

I think the first page of text sets the scene for the time Copernicus lived. What details do you read that supports this idea?

The text says it’s the early 1500s, in a tower, one hundred years before the telescope is invented. It describes instruments the man uses to look at the stars and planets.

What do you learn on page 7?

The man is Nicolaus Copernicus. We find out when and where he was born, and a little about his family.

As we read, we can think about ideas that are not directly stated in the text. This is called drawing inferences. An inference I can make is that Nicolaus’s family is wealthy. What details or examples do you see that support this?

His father is a merchant and a banker. The family has a large home in town and a summerhouse.

Now it’s your turn. What inference can you make?

Solving his question about Mars is what challenges people’s views.

Let’s read to find out.

If you are satisfied that students can apply the focus, have them read through page 15. If you are not, prompt students to return to page 5 to read closely to find something explicit the author tells about Copernicus and to make an inference. Students may not read the entire selection during this session.

As we read today, we’ll think about the details and examples that we can use to explain what the text says and also to support inferences we make. Be sure to note information you want to use in our discussion.
DISCUSSING THE TEXT 10 minutes

Invite students to share details and examples they found on pages 4–15 to explain what events were important in Copernicus’s early life and to support inferences they make. Encourage students to listen carefully for the reasons and evidence classmates provide when supporting their ideas.

As we discuss, listen carefully to the reasons and evidence your classmates give to support their inferences about the book. Who can share an important event in Copernicus’s early life?

He was raised by his uncle after his parents died.

What details did you find that explain why this event was important?

On page 11, it says that Nicolaus’s uncle sent him to school. The sundial at school made Nicolaus interested in astronomy.

Is there an inference you can make about why that was important?

Copernicus will challenge what people think of the universe, so finding out how he got interested in studying the stars and planets is important.

Who can add details to this idea?

On page 14, Copernicus read about Aristarchus, an ancient Greek who said that the earth circled the sun. No one believed this, so everyone said Aristarchus was crazy. On page 15, it says that Copernicus started to agree with Aristarchus’s idea.

Focus on the word astronomy on page 11.

There are many different types of context clues that can help us determine the meaning of an unfamiliar word, such as a definition, an example, or a restatement. How do we find out what astronomy means on page 11?

There is a definition at the end of the first paragraph.

Confirm students’ good use of the focus and encourage them to keep it in mind whenever they read informational text, especially biographies.

You found many details and examples to help you explain what the text says. You also made some good inferences. Use these strategies when you read other biographies and informational texts.

**COMPREHENSION SHARE**

Make self-stick notes to point out details and examples of important things that happen in the text. That way you can refer to them when you are telling about what the text says.

**CONSTRUCTED RESPONSE: COLLECT TEXT EVIDENCE**

Formative/Summative Assessment Have students use the blackline master on page 11 as they read. Students will collect details from the text to answer the question: What events in the life of Nicolaus Copernicus helped him form new ideas about the earth? Review students’ collected evidence as you evaluate their mastery of the learning focus.
Session 2  Text Selection: pp. 4–15

RETURNING TO THE TEXT  5 minutes
Ask students to reflect on the text and discussion from Session 1. Guide them to recall how they applied the learning focus to their reading.

Let’s review our discussion of the biography of Nicolaus Copernicus from the last session.

We looked for details and examples to explain what the text said about the early life of Copernicus, and we made inferences about why some of the events were important. We found out about Copernicus’s childhood, schooling, and interest in astronomy.

Being able to explain what the text says using details and examples and then using this information to draw inferences about the text helps us to deepen our understanding.

READING THE TEXT CLOSELY  10 minutes
Explain the learning focuses for this session. Invite students to reread page 5 and focus on the words that relate to astronomy. Then have them examine the drawing at the bottom of the page and determine how it helps them understand the text. Check to see how well they have understood the focuses. If you are satisfied that students can apply them, have students reread pages 4–15. If not, provide corrective feedback as suggested on page 2 of this lesson plan.

Let’s reread page 5. We know now that the man described is Nicolaus Copernicus. Copernicus observes something about Mars’s motion. Who can point to details that explain Mars’s motion?

The text talks about how Mars moves. That it is puzzling and “makes a backward loop.”

Let’s look at the drawing at the bottom of page 5.

It shows the motion of the planet Mars that Copernicus saw sometimes.

Let’s share how this drawing helps you to understand the puzzle about Mars.

It shows the backward loop Mars appeared to make. The arrows show the direction. I think the lines behind Mars’s path are constellations that were behind Mars as Copernicus was measuring how the planet moved.

Now let’s talk about some of the words on the page. Did anyone notice any words connected to the field of astronomy?

Yes. I noticed words like heavenly body and twinkle.

How do these words help us better understand Mars?

Well, it seems like Mars is different from the stars because it doesn’t twinkle. It’s a heavenly body, but I don’t know what that means. Maybe something in the sky that is not necessarily a star.

Look for drawings, diagrams, charts, and time lines in nonfiction text that visually show you what the text says. You can also look up words connected with the topic. Both of these techniques will help you understand the information you read.
Formative Assessment: Fluency

Listen to each student read a portion of the text. Observe students’ fluency. If students need additional practice with fluency, provide the necessary support at the end of the session. Ask students to note words or phrases they find challenging for discussion after the reading.

Discussing the Text 10 minutes

Invite students to share new details, examples, and domain-specific words or phrases they noted that will help them explain the text and make inferences. Also encourage them to point out anything they see in the illustrations that helps them understand the text.

Now that you’ve had some time to reread the text and study the illustrations, we can discuss any new evidence you found or inferences you made that helps you explain what the text says. Listen to the reasons and evidence each speaker gives for his or her ideas.

The information on page 13 tells why it made sense for people to believe the earth was the center of the universe. I’ve watched the sun move across the sky, and you could imagine that the sun is circling the earth.

Were there any additional words or phrases you saw that we could add to the astronomy category?

I think sundial and angle of a shadow should be added. Universe should be added, too.

How did you find out what a sundial is?

The text explained that a sundial tells time by measuring the angle of the sun’s shadow. I think the art on page 10 shows the students and the professor measuring the shadow, but it’s not clear what a sundial looks like.

What kind of art would have been more helpful for you to understand?

A drawing of a sundial with the sun in the sky and a shadow on the dial would have helped. It could be a diagram with the parts labeled.

You can see the importance of visuals to help explain the text. Did the art help you understand other parts of the text?

The art on pages 14 and 15 helped me think about Copernicus working on his studies. It shows some of the tools he used and some of the drawings he may have done on the walls.

Let’s go back to the text. Were there inferences you made about Copernicus from what you read?

The text says “His notes show that, by age 20, he was starting to think that the ‘crazy’ Aristarchus had been right.” This shows that he began to get his big idea when he was still a student. And I think it means that we must still be able to look at the notes he made. Otherwise, we wouldn’t know this.
Focus on the word **doubt** on page 13.

- Let’s look at the word **doubt** in the last sentence on page 13. Was this an unfamiliar word for anyone? If so, how did you use context clues to help you figure out its meaning?

  > The text says that people believed the earth was the center of the universe. I think the word believed is a clue. In the sentence, it says the astronomers had “no reason to doubt the age-old idea,” so I think doubt means “to question or not believe.”

- Using the context is a good strategy for determining the meaning of a word.

Confirms students’ good use of the learning focuses. Encourage them to continue to look for details and examples that will help them explain what the text says, especially in discussions, and to think of inferences they can make about Copernicus and his ideas that are not stated directly in the text. Also encourage them to pay attention to the art to look for information that will help them better understand the text.

- You found additional details and examples to explain what the text says. You also made some good inferences about Copernicus from what the text did not say directly. As we read the next section of the text, don’t forget to examine the art to see if you find something that will help you understand the text.

# Formative Assessment: Comprehension

Using the Quick Start Planner, note the session’s learning focuses. Observe each student’s articulation and use of text evidence to evaluate individuals’ effective use of the learning focuses.

# Fluency Follow-Up

**Fluency Practice** Invite students to reread pages 13 and 14. Encourage them to use context to confirm or self-correct word recognition and understanding. Explain that context could mean looking for a definition, an example, or a restatement using other words. Add that they should reread more difficult text as necessary to help them with their understanding.

# Constructed Response: Collect Text Evidence

**Formative/Summative Assessment** Have students use the blackline master on page 11 for collecting evidence as they read. Students will continue to collect details from the text to answer the question: **What events in the life of Nicolaus Copernicus helped him form new ideas about the earth?** Review students’ collected evidence as you evaluate their mastery of the learning focus.

# Close Reading Options

**Summative Assessment** Print the online blackline master for independent close reading. Ask students to reread a portion of the Session 3 text selection independently, as indicated on the blackline master. Then have them respond to the prompts (summarize author’s message, identify critical vocabulary, respond to constructed response questions) before returning for Session 3’s small-group discussion. Alternatively, you can use the completed blackline master for summative assessment.
Session 3  Text Selection: pp. 16–30

Key Idea: Text Selection  While serving as a clergyman and physician at Poland’s Frauenburg Cathedral, Copernicus was able to pursue his interest in astronomy. He found evidence that the earth and other planets orbited the sun, a radical idea for his time. His observations changed people’s thinking and formed the basis for modern astronomy.

RETURNING TO THE TEXT  5 minutes
Review what students have read in the first half of the biography about Nicolaus Copernicus. Explain that in this session they will be reading the second half of the book to learn how Copernicus developed his radical ideas.

Who can review what we learned about in the first half of the book?
We learned about Copernicus’s boyhood and life as a student.

Today we’re going to read the second half of the book to learn about the rest of his life and how he formed his radical ideas about the earth.

READING THE TEXT CLOSELY  10 minutes
Review the learning focuses. Invite students to read pages 17 and 19. Check their application of the focuses as you have done previously. Then have students read through page 30, using the same strategies they used to read the first half.

We can continue to use the same strategies to read the rest of the biography. Let’s read pages 17 and 19. Who would like to share important details about Copernicus?

He spent the rest of his life as a clergyman and physician. He still found time for astronomy. He remembered what he observed about moving objects as a child.

What can you infer from these details?
His childhood observations will help him solve the puzzle about Mars.

Remember to look for context clues that help you define astronomy words. And pay attention to the art as you read. You may find an illustration that helps you understand the text.

DISCUSSING THE TEXT  10 minutes
Facilitate a discussion in which students share details and examples they used to understand the text, context that defines domain-specific words, and information they found in the illustrations.

Now that we’ve finished the book, what details and examples could you use to explain what the text said about Copernicus’s discovery?

On page 23, there were questions about the earth moving. The text told us how Copernicus answered them with information that showed the earth was not the center of the universe.

Is there an inference you can make based on the details on this page?
Copernicus was afraid of the power of the church, which is why he handwrote only a few copies of his ideas.

Did you discover any other astronomy terms?
the word orbit

What clues did you find to its meaning?
The word circle restated what it means.
Encourage students to examine the illustrations to find additional information. Who can share how an illustration helped you understand the text?

On page 19, the drawing looks like the one I saw on page 5, but this time it shows how Copernicus explained the loop that Mars seemed to make. I can see how Earth moves faster than Mars and how the loop appears to happen. The illustration from the cover is on page 28. After reading the text, I know that the man on the left is Isaac Newton and the one on the right is Galileo with his telescope. Their ideas grew out of Copernicus’s ideas. It also illustrates Newton’s comment about standing on the shoulders of giants.

CONSTRUCTED RESPONSE: WRITE TO SOURCE

Formative/Summative Assessment Have students continue to use the blackline master on page 11 as they finish reading. Then ask them to write a response on a separate sheet of paper that answers the question: What events in the life of Nicolaus Copernicus helped him form new ideas about the earth? Have students use the text evidence they collected to support their writing.

Writing Task: Informative

Summative Assessment Review with students the elements of informative writing. Talk about how an informative text examines a topic by providing information about it. Point out that informative writing presents ideas in a logical order and uses details and examples to support those ideas. Tell students that they will be writing one or two paragraphs to explain how Nicolaus Copernicus’s ideas about the earth were different from what most people believed during the time that he lived. Consider compiling students’ writing into a “Scientific Milestones” class book.

You have read about the life of Copernicus and how he developed his ideas about the earth, which eventually changed people’s views and the science of astronomy. You will write your own informative text to tell about the views of Copernicus and how they differed from what the people of his time believed. Support your ideas with examples and details from your collected evidence. Be sure to introduce your topic with a strong first sentence and present your ideas and supporting evidence in a clear and logical order.
WORD STUDY

Greek/Latin Affixes and Roots Review with students that knowing the meaning of Greek and Latin affixes and roots will help them determine the meaning of unfamiliar words they encounter while reading.

- When you find an unfamiliar word, look for a Greek or Latin affix or root in the word. Knowing the meanings of these word parts will help you determine the unfamiliar word’s meaning. Let’s check the word astronomy in the last sentence on page 11. The Greek root astro means “star.” The Greek suffix -nomy means “the system of laws governing.” What would you say is the meaning of astronomy?
  
  the study of the system of laws governing stars, the science of studying stars

- Look for a similar word in the last sentence on page 5.
  
  astronomers

- Think about what you know about -er and -s. How would you define this word?
  
  “people who study the stars”

- Can you find more related words on pages 29 and 30?
  
  astronomical, astronauts

VOCABULARY

Context Clues Focus on the word stern on page 9 and physician on page 17.

- Let’s look at the word stern on page 9. How is the word used in this context?
  
  to describe the uncle of Copernicus

- Who can find an example here that is a clue to the meaning?
  
  He never seemed to laugh.

- How could you use this example to define the word?
  
  “serious”

- Let’s look at the word physician on page 17. Who can find a restatement or another word for physician on this page?
  
  doctor

WORD RECOGNITION

Multisyllabic Words Focus on the word observations on page 19.

- To read and pronounce an unfamiliar word that has many syllables, you can look at the parts of the word and use what you know about the sounds of the letters, syllables, and affixes. Let’s look at the word observations on page 19. What should I do?
  
  You can divide it into syllables.

- We know that each syllable has a vowel sound: ob-ser-va-tions. (Write the syllables on chart paper or a whiteboard.) Do you see a familiar suffix?
  
  -tion

- How about a root word?
  
  observe

- Let’s say the word together. Now let’s try another word: realizing on page 25.
Comprehension: Make Inferences

Write an inference you made about Nicolaus Copernicus. Then identify details that support your inference.

My Inference

Detail
Page Number: ___

Detail
Page Number: ___

Detail
Page Number: ___

Score: __________
Collecting Text Evidence

What events in the life of Nicolaus Copernicus helped him form new ideas about the earth?

Use this chart to collect evidence that supports your answer to the question. Be sure to include page references. You may need more than one copy of this chart.

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Score: ________
Writing Task: Your First Draft

Explain what people believed about the earth in 1512 and how the ideas of Copernicus were different. Use details and examples to show how Copernicus formed his ideas.

REMEMBER: A well-written informative paragraph includes:
• a topic sentence that tells what you are writing about
• one clear idea in each sentence
• one or more examples that help to explain each idea
• a concluding sentence that wraps up your topic and ideas