

# WORKBOOK Writing with Evidence Day 1



# Table of Contents

Learning Targets and Success Criteria
NWEA-Nebraska Professional Learning Goal Statement
Writing as Your Students
Common Terms
Learning Stations Overview
Sentences: <i>Because, But</i> , and <i>So</i> and Adding Appositives7
Single Paragraphs: Outlines
Stepping Stones Toward Multiple-Paragraph Arguments: Drafting Claims and Prioritize Evidence
Science Notebooks: Writing with Evidence Incubators12
Reanimate Writing: Nominalizations
Traits of Text-Dependent Analysis: Analysis of Text and Use of Evidence
Feedback Practice
Learning Prompts

#### Learning targets

- Connect writing with evidence to college and career readiness
- Identify the critical attributes and skills of writing with evidence
- Apply instructional strategies to help students write with evidence

#### **Success criteria**

- Explain how writing with evidence is supported by instructional shifts and practices
- Recognize that writing with claims, evidence, and reasoning are elements of your discipline
- Distinguish between the types of claims, evidence, and reasoning used across disciplines
- Evaluate writing with claims, evidence, and reasoning
- Construct and analyze anticipated student written responses
- Explore and collaborate with colleagues on instructional strategies to support writing with evidence learning

#### NWEA-Nebraska professional learning goal statement

Through partnership and engagement with the Nebraska Department of Education, Public School Districts, and Educational Service Units (ESU), the NWEA<sup>®</sup> professional learning goal is to strengthen the capacity of all Nebraska public educators, including the Certified Facilitators, through the systemwide professional learning (grounded in Professional Learning and Academic Content Standards) to increase the role-based knowledge, skills, and explicit transfer-to-practice of all aspects of the Nebraska Student-Centered Assessment System (NSCAS) balanced assessment system.

- Expand assessment literacy across the Nebraska education ecosystem in ways that are specific to the Nebraska balanced assessment system: NSCAS Summative, NSCAS Interim (e.g., MAP<sup>®</sup> Growth<sup>™</sup>), and classroombased formative practice
- Build and maintain a student-centric focus in all assessment discussions and decisions
- Emphasize and develop formative classroom practices (learning targets and success criteria, questioning and feedback, activating learners) as key components of a balanced assessment approach
- Develop and drive data-informed decision-making including assessment results at the classroom, school, and system levels
- Serve as a resource in response to the differentiated needs of a district and ESUs and provide research-based resources grounded in best practices for adult learning

### Writing as Your Students

Select the prompt for the content area you teach. Read your respective supplemental material and respond to the prompt as if you were one of your students.

- Science: see the lcing Injuries assessment on p. 18
- English language arts: see the Stephen Hawking assessment on p. 20

# **Common Terms**

### **Directions: Part 1**

- 1. Independently consider the terms claim, evidence, and reasoning. In the table below, add notes about any revisions you'd make to the definitions. (5 min.)
- 2. Share your ideas with the rest of your group. Work together to create definitions for each term and capture them on chart paper. (6 min.)
- 3. Take a gallery walk to view other groups' definitions. Share out observations. (6 min.)

#### **Shared terms: Argument**

"An argument is a reasoned, logical way of demonstrating that the writer's position, belief, or conclusion is valid."1

English language arts	Revision notes:	Science	Revision notes:
<b>Claim (thesis statement):</b> The text introduces a clearly crafted claim that can be supported by evidence and reasoning.		<b>Claim (thesis statement):</b> The text states a focused claim to be supported about a given phenomenon.	
<b>Evidence:</b> The text presents specific and relevant evidence to support analysis and demonstrates proper citation of sources.		<b>Evidence:</b> Scientific evidence or observations clearly and accurately support the claim precisely referencing scientific terms and concepts.	
<b>Reasoning (analysis):</b> The text logically organizes components of the argument and clarifies the relationships among claims, evidence, and reasoning and between claims and counterclaims.		Reasoning: The text explains why synthesized evidence supports the claim based upon appropriate and adequate scientific principles. As needed, the text explains why alternative claims are inaccurate.	

<sup>1</sup>National Governors Association Center for Best Practices, Council of Chief State School Officers. 2010. *Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects: Appendix A.* Washington, DC: National Governors Association Center for Best Practices, Council of Chief State School Officers. http://www.corestandards.org/assets/Appendix\_A.pdf.

#### **Directions: Part 2**

- 1. In your group, choose one or more of the following questions to discuss: (10 min.)
  - What surprised you about these shared terms? What made certain cards difficult to sort?
  - What might be difficult for your students as they manage these concepts?
  - What differences and similarities exist between argument writing in ELA and science?
  - What critical attributes in argument writing do ELA and/or science teachers value that are not reflected in these shared terms?
- 2. Discuss how you might structure upcoming argument writing assignments so students can better understand and use claims (thesis statements), evidence, and reasoning (analysis). Save these ideas for your planning at the end of the session. (4 min.)
- 3. Optional: If time permits, work as a group to combine revisions to create definitions the entire group can support. (15 min.)

### Learning Stations Overview

#### **LEARNING STATION 1**

#### Sentences: Because, But, and So and Adding Appositives

With a partner or small group, explore and practice the *Because*, *But*, *So* and Adding Appositives sentence-level writing strategy.

#### **LEARNING STATION 2**

#### **Single Paragraphs: Outlines**

With a partner or small group, explore and practice single-paragraph drafting and outlining to support student argument writing with evidence.

#### **LEARNING STATION 3**

### Stepping Stones Toward Multiple-Paragraph Arguments: Drafting Claims and Prioritizing Evidence

With a partner or small group, explore scaffolded practice to draft claims, then identify and prioritize evidence.

#### **LEARNING STATION 4**

#### Science Notebooks: Writing-with-Evidence Incubators

With a partner or small group, explore science notebooks and their role in supporting students to construct arguments and write with evidence. Individually consult multiple resources and passages, then share your findings with your group.

#### **LEARNING STATION 5**

#### **Reanimate Writing: Nominalizations**

With a partner or small group, explore nominalizations and their use in scientific texts.

#### **LEARNING STATION 6**

### Traits of Text-Dependent Analysis: Analysis of Text and Use of Evidence

With a partner or small group, review the Nebraska Department of Education Text-Dependent Analysis (TDA) Scoring Rubric (nwea.us/NETDArubric) and consider how you might use it in your classroom.

# Sentences: Because, But, and So and Adding Appositives

With a partner or small group, explore and practice the sentence-level writing strategy *Because*, *But*, *So* and Adding Appositives. What seems a simple sentence stem activity requires students to think analytically about new concepts in quick doses of writing.

Because helps explain why something is true. But signals a change in direction. So reveals what happens as a result of something else.

#### Directions

1. Turn the following stems into complete sentences.

Cooler air takes up less space than warm air because

Cooler air takes up less space than warm air, but

Cooler air takes up less space than warm air, so

2. Next, you'll add appositives to the sentences you've already created. An appositive is a second noun phrase placed beside another noun to explain it more fully. For example:

Galileo, a famous physicist, constructed the first working thermoscope.

Appositives do not include verbs, and they're usually set apart from the rest of the sentence by commas. Why practice adding appositives?

- They are a quick way to check for comprehension.
- They are an easy-to-learn technique to include more information and add complexity.
- They provide a change-of-pace strategy for creating topic and concluding sentences.
- 3. Using the space below, rewrite your sentences selecting one noun from each, then practice adding an appositive.

4. Consider when and how you might make use of one or both strategies in your classroom.

#### Tips

- Practice completing and modeling new activities like these before asking your students to do them.
- When adapting new activities to your content, ensure your students possess enough academic knowledge to complete them successfully.
- You can use Because, But, and So and Adding Appositives to check for understanding or to practice using new vocabulary.

### LEARNING STATION 2 Single Paragraphs: Outlines

With a partner or small group, explore and practice single-paragraph drafting and outlining to support student argument writing with evidence.

The single-paragraph outline gives writers a simple way to gather their thoughts into coherent points of argument. Solid lines indicate places where writers construct complete sentences. Dotted lines are for noting supporting evidence.

Directions		Outline
1.	Practice using the single-paragraph outline to assert a claim in response to the following question: <i>Do people complain too much?</i>	Claim (topic sentence)
	Restate the question as a telling sentence in the <b>Claim</b> (topic sentence) section on the right.	
2.	Consult Shannon Doyne's <i>New York Times</i> blog post "Do People Complain Too Much?" (bit.ly/dodoyne) to gather supporting evidence for your claim.	Supporting evidence (with citation as necessary)
3.	In the supporting evidence sections, write notes to yourself about the evidence you might reference to defend your claim.	
4.	In the conclusion section, draft a sentence that explains how the evidence you've gathered reasonably supports your claim.	Supporting evidence (with citation as necessary)
5.	Consider when and how you might ask your students to use this outline to structure their writing.	
		<b>Reasoning</b> (Analysis): Why does this evidence support your claim?

Conclusion: Tie claim, evidence, and reasoning together in a logical format

# Stepping Stones Toward Multiple-Paragraph Arguments: Drafting Claims and Prioritizing Evidence

Writers need scaffolded practice to draft claims, then identify and prioritize evidence. With a partner or small group, explore scaffolded practice to draft claims and identify and prioritize evidence.

#### Part 1

Claims representing opposing positions are provided with evidence to be sorted and prioritized.

1. Follow the outline directions on p.10 to practice identifying and prioritizing evidence that supports the claim and counterclaim.

Note: A counterclaim is a claim made to rebut a previous claim.

2. Once complete, proceed to Part 2.

#### Part 2

Topics are provided, and students are asked to create a claim and counterclaim using argumentative terms and change-of-direction transitions. They then brainstorm evidence ideas.

Follow the directions in the template on p. 11 to draft a counterclaim. As skills develop, expanded outlines can be used to structure multiple-paragraph argumentative essays.

#### Consider:

- How might you adapt this outline to meet the needs of your students?
- When and how might you give your students opportunities to practice drafting claims and prioritizing evidence?

### PART 1

#### Prioritizing evidence directions

- 1. In the left column, identify possible evidence from the list you received that supports each claim.
- 2. In the **Rank evidence** fields, record your evidence notes and rank the evidence from least to most compelling.

Possible evidence	Claim: Aquariums are beneficial and should be maintained.	
Food + water + shelter	Rank evidence:	LEAST COMPELLING
Small exhibits = little room		
Captivity > distress		
Conservation education		
Protects endangered species		
Teasing visitors		MOST COMPELLING
Care for injured + abandoned	Counterclaim: Aquariums are harmful and should be abolished.	
Wild animals belong in the wild	Rank evidence:	LEAST COMPELLING
		MOST COMPELLING
		MOSTCOMPELLING

### PART 2

### Drafting claims and prioritizing evidence directions

- 1. Select a topic from the list you received.
- 2. Draft a claim and counterclaim. For each, use at least one argumentative term and/or one change-of-direction transition from the word banks.
- 3. Brainstorm a list of potential evidence to support your claims.
- 4. Rank your evidence from least to most compelling.

Argumentative terms			
advocate	debate		
argue	defend/defenders		
believe	evidence		
challenge	oppose/opponents		
claim	propose/proponents		
criticize/critics	support/supporters		

Change-of-direction transitions				
although	instead			
but	on the other hand			
despite	otherwise			
even though	rather			
however	while			
in contrast	yet			

Торіс		
Possible evidence	Claim:	
	Rank evidence:	LEAST COMPELLING
		MOST COMPELLING
	Counterclaim:	
	Rank evidence:	LEAST COMPELLING
		MOST COMPELLING

# Science Notebooks: Writing-with-Evidence Incubators

With a partner or small group, explore science notebooks and their role in supporting students to construct arguments and write with evidence.

Your focus questions:

- How do science notebooks have the potential to be writing-with-evidence incubators?
- Which of these key concepts and ideas might positively influence the writing-with-evidence opportunities in my classroom?

### Directions

1.	Individually read one of the following resources.	Key concepts	Ideas/wonders
2.	Note key concepts and ideas/wonders in the T-chart on the right.		
3.	Participate in a round-robin, sharing your takeaways with the rest of your group. Share in the order the resources are listed below.		
Res	ources		
•	<b>Teacher Handbook</b> , from OpenSciEd (see "Progress Trackers," pp. 28–31, and "Science Notebook Management," pp. 49–51), bit.ly/teacheropen		
•	Using Sentence Frames, from California Academy of Sciences, bit.ly/californiausing		
•	<b>Constructing Explanations</b> , from California Academy of Sciences, bit.ly/californiaconstruct		

# Reanimate Writing: Nominalizations

With a partner or small group, explore nominalizations and their use in scientific texts. A nominalization is the formation of a noun from other parts of speech. For example, *formation* is the nominalization of the verb form.

The Yale Center for Teaching and Learning Graduate Writing Lab states, "Too many nominalizations can weigh down a sentence so heavily that it suffocates its own meaning—and its readers!"<sup>1</sup> According to Duke University Graduate School's Scientific Writing Resource, "Many scientific writers misuse them by using abstract nouns to convey action. This creates a disconnect between structure and meaning."<sup>2</sup>

In this station, you'll learn more about nominalizations.

#### Directions

- Read more information from the Purdue University Online Writing Lab: Sentence Clarity: Nominalizations and Subject Position, bit.ly/sentencepurdue.
- 2. Scroll to the bottom of the Online Writing Lab page to find the two nominalization quizzes. If time permits, take both quizzes.
- 3. Consider the role nominalizations play in your informal and formal communications. What can you do to help your students identify them?

#### **Optional resource**

TED-Ed<sup>®</sup> Animation, **Beware of Nominalizations (aka Zombie Nouns)**, by Helen Sword (5:04), **bit.ly/bewaresword** 

<sup>1</sup>Reproduced by permission from Yale Center for Teaching and Learning, Graduate Writing Lab. May 2015. *Nominalizations*.

 $https://poorvucenter.yale.edu/sites/default/files/files/Nominalizations\_1.pdf.$ 

<sup>2</sup>Reproduced by permission from Duke Graduate School. n. d. "Scientific Writing Resource: Lesson 1: Subjects and Actions." https://cgi.duke.edu/web/sciwriting/index.php?action=lesson1.



# Traits of Text-Dependent Analysis: Analysis of Text and Use of Evidence

With a partner or small group, review the Nebraska Department of Education Text-Dependent Analysis (TDA) Scoring Rubric (nwea.us/NETDArubric), shown on the following page, and consider how you might use it in your classroom. Note: This rubric was designed for Grade 8.

During this learning station, focus your attention on analysis of text and use of evidence. Below, Writing Skills is deconstructed using the rubric.

#### Directions

- 1. Underline the nouns: What content are students referencing to express their learning?
- 2. Circle the verbs): How will students demonstrate their knowledge and skills?
- 3. Box the qualitative conditions : How well or completely did students complete the task?
- 4. Identify key vocabulary: What terms will students need to learn to use this rubric?
- 5. Consider the following: What evidence of learning would students need to demonstrate exemplary performance? How might this rubric be used in science or other content areas?

### Example

Writing Skills	Generates) a minimally focused	Generates)a partially focused	Generates)a[focused]response	Generates)a well-focused response
1.5.c	response which lacks an introduction/thesis, body,	response which includes a partially effective introduction/thesis, body,	which includes a <u>clear</u> <u>introduction</u> / <u>thesis</u> , <u>body</u> , <u>conclusion</u> , and	which includes a purposeful introduction/thesis, body,
2.1.b	<u>conclusion</u> , and/or <u>transitions</u> • [Ineffectively] (demonstrates) an	conclusion, and/or transitions <ul> <li>Partially (demonstrates) an</li> </ul>	transitions	<u>conclusion</u> , and <u>transitions</u> • Skillfully (demonstrates)an
2.1.d	organizational pattern and/or mode	organizational pattern and/or mode	organizational pattern and mode	appropriate organizational pattern
2.1.e	Minimally uses precise word choice	Occasionally uses precise word	Uses precise word choice and	Skillfully uses precise word choice
2.1.h	and/or [content-specific] vocabulary from the text(s)	<u>choice</u> and/or <u>content-specific</u> vocabulary from the <u>text(s)</u>	the text(s)	from the <u>text(s)</u> tolenhance ideas
2.2.a	<ul> <li>Ineffectively (demonstrates) conventions of standard English;</li> </ul>	<ul> <li>Partially demonstrates conventions of standard English; errors may</li> </ul>	<ul> <li>(Demonstrates) <u>conventions</u> of standard English; if present, errors</li> </ul>	<ul> <li>Thoroughly demonstrates conventions of standard English;</li> </ul>
2.2.d	errors may seriously (interfere) with meaning	(interfere) with meaning	seldom (interfere) with meaning	if present, <u>errors do not</u> (interfere) with <u>meaning</u>

### Your Turn

Nebraska English Language Arts 8th Grade Text-Dependent Analysis Scoring Rubric

Nebraska English Language Arts Standards	1 Demonstrates minimal analysis of text, use of evidence, and writing skills	2 Demonstrates partially effective analysis of text, use of evidence, and writing skills	3 Demonstrates effective analysis of text, use of evidence, and writing skills	4 Demonstrates exemplary analysis of text, use of evidence, and writing skills
Analysis of Text 1.6 1.6.i	<ul> <li>Minimally addresses part(s) of the task</li> <li>Demonstrates minimal understanding of the text(s)</li> <li>Ineffectively analyzes explicit and/ or implicit ideas from the text(s)</li> </ul>	<ul> <li>Addresses some part(s) of the task</li> <li>Demonstrates partial understanding of text(s)</li> <li>Partially analyzes explicit and/or implicit ideas from the text(s)</li> </ul>	<ul> <li>Addresses all parts of the task</li> <li>Demonstrates understanding of the text(s)</li> <li>Analyzes explicit and implicit ideas from the text(s)</li> </ul>	<ul> <li>Thoroughly addresses all parts of the task</li> <li>Demonstrates thorough understanding of the text(s)</li> <li>Thoroughly analyzes explicit and implicit ideas from the text(s)</li> </ul>
Use of Evidence 1.6.i 2.1.c 2.1.i 2.2.b 4.1.a 4.1.b	<ul> <li>Minimally integrates evidence from the text(s) by using few details, examples, and/or quotes</li> <li>Provides little or no relevant and/or accurate evidence from the text(s) to support analysis</li> <li>Ineffective use of paraphrases or quotes that attribute information to the text(s)</li> </ul>	<ul> <li>Partially integrates evidence from the text(s) by using some details, examples, and/or quotes</li> <li>Provides some relevant and/or accurate evidence from the text(s) to partially support analysis</li> <li>Partially effective use of paraphrases or quotes that attribute information to the text(s)</li> </ul>	<ul> <li>Integrates specific evidence from the text(s) by using details, examples, and/or quotes</li> <li>Provides relevant and accurate evidence from the text(s) to support analysis</li> <li>Uses paraphrases or quotes that attribute information to the text(s)</li> </ul>	<ul> <li>Skillfully integrates specific evidence from the text(s) by using details, examples, and/or quotes</li> <li>Provides relevant and accurate evidence from the text(s) to thoroughly support analysis</li> <li>Skillfully uses paraphrases or quotes that attribute information to the text(s)</li> </ul>
Writing Skills 1.5.c 2.1.b 2.1.d 2.1.e 2.1.h 2.2.a 2.2.d	<ul> <li>Generates a minimally focused response which lacks an introduction/thesis, body, conclusion, and/or transitions</li> <li>Ineffectively demonstrates an organizational pattern and/or mode suited to the task</li> <li>Minimally uses precise word choice and/or content-specific vocabulary from the text(s)</li> <li>Ineffectively demonstrates conventions of standard English; errors may seriously interfere with meaning</li> </ul>	<ul> <li>Generates a partially focused response which includes a partially effective introduction/thesis, body, conclusion, and/or transitions</li> <li>Partially demonstrates an organizational pattern and/or mode suited to the task</li> <li>Occasionally uses precise word choice and/or content-specific vocabulary from the text(s)</li> <li>Partially demonstrates conventions of standard English; errors may interfere with meaning</li> </ul>	<ul> <li>Generates a focused response which includes a clear introduction/ thesis, body, conclusion, and transitions</li> <li>Demonstrates an appropriate organizational pattern and mode suited to the task</li> <li>Uses precise word choice and content-specific vocabulary from the text(s)</li> <li>Demonstrates conventions of standard English; if present, errors seldom interfere with meaning</li> </ul>	<ul> <li>Generates a well-focused response which includes a purposeful introduction/thesis, body, conclusion, and transitions</li> <li>Skillfully demonstrates an appropriate organizational pattern and mode suited to the task</li> <li>Skillfully uses precise word choice and content-specific vocabulary from the text(s) to enhance ideas</li> <li>Thoroughly demonstrates conventions of standard English; if present, errors do not interfere with meaning</li> </ul>

# Feedback Practice

Capture your notes in the following table when reviewing your written samples.

Topics	Notes
<b>Claim/explanation:</b> A statement or conclusion that answers the original question, problem, or prompt	
Is the claim clear, specific, accurate (scientifically or otherwise), and complete?	
<b>Evidence:</b> Information, data, and/or observations that appropriately and sufficiently support the claim	
Is the evidence appropriate (scientifically or otherwise), thorough, and convincing?	
Reasoning: A justification that logically links evidence to the claim	
Is the explanation clear, complete, and logical?	
For science, does reasoning include appropriate and sufficient scientific principles?	
<b>Potential instructional moves:</b> Teacher actions that spur further growth in knowledge and skills	
What can I learn from this that will inform my next instructional steps to help this student learn and grow?	

Working with your school partner:

- 1. Choose one instructional strategy or tool from today's workshop to incorporate into your practice to support students in writing with evidence. You may discover that science and ELA teachers need different strategies depending on the content area.
- 2. Consider your curriculum, upcoming topics, and how the strategies or tools can be incorporated to generate one to three student samples you can bring with you for the Writing with Evidence Day 2 workshop.

Strategies/tools		
Upcoming curriculum topic	When	How
Other ideas		

# **Science Prompt**

### Icing Injuries Assessment\*

To care for and prevent injury, athletes often use plastic wrap to attach bags of ice cubes directly on top of their skin for 20 minutes per day after a practice or a workout.

Part of the way through the 20 minutes, the ice begins to melt and drip. At 20 minutes, doctors recommend removing the ice pack because the skin gets very cold and could become damaged. Two athletic trainers, Steve and Sophie, were wondering, "How does an ice pack work to cool down the skin and muscles?" They collected some data, shown in the table below.

Data collected	<b>At 0 min.</b> (right when the ice pack is attached to the skin)	At the end of 20 minutes
Ice pack temperature	0°F	15°F
Skin temperature	98.6°F	55°F
Feeling of skin	Normal	Numb, cold
lce pack	Not melting	Melting

- 1. Steve and Sophie argued over what the data showed about how the systems (ice pack and skin) work. Here is what they said:
  - Steve: "The cold from the ice pack moves out of the ice pack and enters the skin, causing it to cool down."
  - Sophie: "Heat from the body goes into the ice pack and causes the ice to warm up and melt."

Complete the table to organize the data.

Which pieces of evidence support Steve's claim?	Which pieces of evidence support Sophie's claim?	Which pieces of evidence support both claims?

2. Do you think Steve or Sophie is correct?

Show why you picked Steve or Sophie's claim by drawing a model zooming in at the point where the ice pack and skin touch that explains how the contact between the ice pack and skin causes the skin to cool down and/or causes the ice to melt. In your model, make sure to include these components: particles for the ice pack, particles for the skin, how the particles are moving in each system based on their temperatures, and how energy is entering or leaving the systems.

\*Reproduced by permission from OpenSciEd. "Lesson 14: Assessment Scoring Guide." How Can Containers Keep Stuff from Warming Up or Cooling Down?: Thermal Energy: Cup Design. OpenSciEd Unit 6.2. 2019. https://www.openscied.org/6-2-thermal-energy-download. Terms of Use: This work is licensed under a Creative Commons Attribution 4.0 International License. It is attributed to OpenSciEd.



In the space below, provide a written explanation of your model. Be sure to provide a description of your model as well as explain your reasoning for choosing either Steve or Sophie's claim. Include pieces of evidence that support the claim.

Your response will be reviewed based on how well you:

- Demonstrate your understanding of the ideas in the text
- Use evidence from the text to help develop and support your ideas
- Organize your response in a logical manner
- Demonstrate an appropriate writing style through the use of precise word choice and varied sentences
- Use standard conventions for writing



# English Language Arts Prompt

### Stephen Hawking\*

Stephen Hawking is one of the most famous theoretical physicists of our time, and not just for his revolutionary work in physics and cosmology. Over his lifetime, he has contributed immensely to scientific knowledge of relativity, black holes, quantum mechanics, and the universe's beginning. However, he is also well-known throughout the world because of his status as a role-model for people with disabilities. He has lived with motor neuron disease, a paralyzing disease, for decades, but he continues to advocate for others who live and work with disabilities as well.

#### **Early life**

The Hawking family members were all very intelligent; both of his parents studied at Oxford University near London, and his father became head of a division of Britain's National Institute for Medical Research. Hawking himself was born in January 1942. The family was known in their hometown of St. Albans, Britain for being somewhat eccentric—it was common knowledge that family dinners at the Hawking house meant silently reading to yourself at the table.

In high school, Hawking maintained a close group of friends who all enjoyed activities such as making homemade fireworks, building model airplanes, and discussing big topics like religion and the mind. In 1958, Hawking and his friends began constructing basic computers with old clock and telephone parts (computers themselves had only been around for about ten years).

#### **Oxford and Cambridge**

Hawking decided to follow in his parents' footsteps and attend Oxford University, where he studied physics and chemistry. Although Oxford was one of the top universities in the world, Hawking was bored by his first-year studies, calling them "ridiculously easy." Hawking felt lonely during that first year, so in his second year he decided to become more socially active. He became popular and well-liked, known for being witty and appreciating music and science-fiction. Even though he kept relatively lazy study habits, his incredible intelligence was clear. The professors conducting his final examinations had no choice but to give him top honors, which launched him into PhD studies at Cambridge University.

Graduate school at Cambridge proved difficult for Hawking. He did not get to work with the physicists he had hoped. Worse news came when he was soon diagnosed with motor neuron disease, also known as amyotrophic lateral sclerosis (ALS), and given only two years to live. This understandably depressed him. However, the disease progressed much more slowly than anyone expected, so while he had some trouble walking and speaking clearly, he was still able to pursue his passion for science.

#### Career

Hawking made many important discoveries and theories over the course of his life. One of his earliest theories was that the universe began as a single point (and that it had not existed forever, as some scientists believed). This theory is one of the key building blocks in the theory of the Big Bang.

Additionally, Hawking conducted research to learn more about black holes. In 1973, he hypothesized that black holes emit radiation; some scientists thought the idea was ridiculous, but several years later further studies proved he was correct. Hawking frequently made wagers with other scientists about whose theory would eventually be proven correct; he often won, but not always!

In the late 1970s Hawking was made a professor of mathematics at Cambridge University. Both he and his work grew in popularity around the world, and he received many medals and awards for his accomplishments.

\*Reproduced by permission from CommonLit. McBirney, Jessica. "Stephen Hawking." 2017. https://www.commonlit.org/en/texts/stephen-hawking.

As Hawking continued to develop new theories about the beginnings of the universe, he decided to publish a book on the topic that a general audience would be able to read. A Brief History of Time was first published in 1984 and immediately made it onto bestseller lists in several countries. Over the next decade, he published several other books, some for scientific audiences and some for general audiences, including a series of children's books (co-authored by his daughter) titled George's Secret Key to the Universe.

Hawking remains active in the scientific community. He has been promised a ride on the first privately launched spaceship, the Virgin Galactic spaceship, although there is no launch date yet. He continues to create scientific content for broad audiences but also remains involved with many hot issues in the world of physics.

#### Living with ALS

Hawking's disease certainly never stopped him from achieving incredible things, but it has posed many difficulties. He lost most of his ability to write while he was still in his 20s, but he was able to continue working in physics by seeing equations in terms of geometry. When he became too unsteady on his feet to walk, he resigned himself to wild and unpredictable wheelchair driving instead. He and his wife campaigned for greater wheelchair access around Cambridge grounds, but he hesitated to call himself a disability rights activist because he preferred to distance himself from the disease. ALS eventually made Hawking's speech too slurred for others to understand him. He utilized a variety of cutting-edge technologies to help him communicate. At first, he raised his eyebrows to point to letters that spelled out words. Eventually he and some friends developed a computer program that allowed him to select words from over 2,000 pre-coded phrases. The computer was attached to his wheelchair, so he could communicate without a translator. As his disease progressed, he used more and more advanced technology, including predictive software and computers that sensed his cheek movements.

Although he prefers to be known for his work in physics, Hawking has become more of a disability rights activist since the 1990s. Around 2000, he and 11 other people worked on a charter calling governments to increase support for those with disabilities. In 2012, he hosted part of the opening ceremonies for the Paralympics.

# English Language Arts Prompt, continued

### Writing prompt

What was Stephen Hawking like as a person? Make a claim about what kind of person he was and defend your claim using evidence from the text. Write your response in the space provided.

Your response will be reviewed based on how well you:

- Demonstrate your understanding of the ideas in the text
- Use evidence from the text to help develop and support your ideas
- Organize your response in a logical manner
- Demonstrate an appropriate writing style through the use of precise word choice and varied sentences
- Use standard conventions for writing

Writing with Evidence Day 1 Workbook 23



© 2020 Nebraska Department of Education. No part of this presentation may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher.

NWEA and MAP are registered trademarks, and MAP Growth is a trademark, of NWEA in the US and in other countries.

The names of other companies and their products mentioned are the trademarks of their respective owners.

© Copyright 2010 National Governors Association Center for Best Practices and Council of Chief State School Officers. All rights reserved.

We are providing links to the third-party website(s) contained in this material only as a convenience, and the inclusion of links to the linked site does not imply any endorsement, approval, investigation, verification, or monitoring by us of any content or information contained within or accessible from the linked site. NDE nor NWEA controls the accuracy, completeness, timeliness, or appropriateness of the content or information on the linked site. If you choose to visit the linked site, you will be subject to its terms of use and privacy policies, over which neither NDE nor NWEA has control. In no event will NDE or NWEA be responsible for any information or content within the linked site or your use of the linked site. By continuing to the linked site you agree to the foregoing.

February 2020 | PL21200

24 Writing with Evidence Day 1 Workbook