

# Disaster in the Sky

How the tragedy of the 1986 *Challenger* mission changed space exploration forever

## About the Story

Lexile: 890L

For qualitative complexity factors, go to the Story tab.

**Learning Objective:** to explore key ideas and details in a narrative nonfiction article

**Key Skills:** key ideas and details, interpreting text, cause and effect, vocabulary

**Essential Questions:**

- What drives humans to explore?
- What is the universe, and what is Earth's place in it?
- What can we learn from the past?
- What is the value of space exploration?

**Standards:**

The article and lesson support these Common Core anchor standards:  
R.1, R.2, R.3, R.4, R.5, R.7, W.2, W.4, SL.1, L.4, L.5, L.6

For more standards information—including TEKS—go to Scope Online.



## Your Teaching Support Package

Find your full suite of support materials at [scope.scholastic.com](https://scope.scholastic.com).

### Audio:

- Audio read-aloud
- Text-to-speech
- Vocabulary

### Video:

Behind the Scenes

### Slideshow:

The History of Spaceflight

### Differentiated Articles:

- Lower-Lexile version
- Spanish language version

### Connected readings from the

#### Scope archives:

Special Collection: *The Wonders of Space*

### Skill Building Activities to print, project, or share digitally:

- Writing Planner: The *Challenger* Mission
- Close Reading and Critical Thinking
- Video Discussion Questions
- Choice Board
- Anticipation Guide
- Vocabulary: Definitions and Practice
- **Core Skills Workout:** Summarizing,\* Text Features, Text Structure,\* Nonfiction Elements
- Quiz\*
- Contest Entry Form

\*Available on two levels



# Step-by-Step Lesson

## 1. Preparing to Read

25 minutes

### Do Now: Anticipation Guide (5 minutes)

- Project the **Anticipation Guide** (available in your Resources tab) on your whiteboard or share the print or Google Forms version with each student. Have students decide whether they agree or disagree with each statement, then discuss. After reading the article, ask students to share whether any of their answers have changed and, if so, why.

### Watch a Video (10 minutes)

- Watch the **Behind the Scenes video**, in which author Kristin Lewis talks about her research and writing process. Have students respond to the **Video Discussion Questions** (available in your Resources tab) in small groups or as a class.

### Preview Vocabulary (10 minutes)

- Project the **Vocabulary: Definitions and Practice**. Review the definitions as a class. Highlighted words: *brittle*, *cosmos*, *commission*, *engineers*, *orbited*, *rigorous*. Optionally, print or share the interactive link directly to your LMS and have students preview the words and complete the activity before class. Audio pronunciations of the words and a read-aloud are embedded in the interactive slides.

## 2. Reading and Discussing

50 minutes

- Invite a volunteer to read the **As You Read** box on page 5 of the magazine or at the top of the digital story page.
- Read the article once as a class. (*Differentiation: Share the **lower-Lexile version** or the **Spanish version** of the article.*) Optionally, have students listen to author Kristin Lewis read her article aloud while they follow along. The **audio read-aloud** is located in the Resources tab in Teacher View and at the top of the story page in Student View.
- Divide students into groups to read the article again and respond to the following close-reading questions.

### Close-Reading Questions (20 minutes)

*The following questions can be shared in printable or interactive form.*

- 1. What was ordinary about the *Challenger* mission? What was extraordinary about it?** (key ideas and details) *What made the mission ordinary was that Challenger was one of five reusable spacecraft used in a shuttle program that was in its 14th year. The shuttles had already had 24 successful missions, and Challenger itself had been to space nine times already. What made this mission extraordinary was its special crew, which included the first private citizen to go on a space mission—a teacher named Christa McAuliffe. Kids would be tuning in across the nation to see her teach lessons from orbit. This made this mission especially thrilling for the public.*
- 2. What big ideas does the section “Great Achievement” help readers understand?** (key ideas and details) *This section helps readers understand how short and recent the era of human spaceflight and exploration is in the vast timeline of human history. It also helps readers understand how successful NASA’s spaceflight program had been prior to 1986.*
- 3. Consider the quote Lewis includes from Thiokol engineer Allan McDonald: “If anything happens to this launch, I wouldn’t want to be the person that has to stand in front of a board of inquiry to explain why we launched.” What did he mean? Why did NASA go ahead with the launch?** (interpreting text, key ideas and details) *McDonald meant that if something went wrong with Challenger and there was an investigation, there would be no way to justify the decision to launch. In other words, he was saying that launching was too big a risk and the reasons for going ahead with it were not defensible. NASA went ahead with the launch because of the pressure to stay on schedule and keep costs down. Leaders at Thiokol agreed to support the launch to make Mulloy happy and avoid losing millions of dollars in future business with NASA.*
- 4. What role did the weather play in the catastrophe?** (cause and effect) *First, stormy weather postponed the original launch date. Then, on the night before Challenger was set to launch, Florida was hit by extreme cold weather. Temperatures were well below freezing, and on the morning of the launch, Challenger was covered in icicles. It was this frigid weather that caused the O-rings to become brittle and stop working, resulting in the leak of burning fuel and the catastrophic explosion.*
- 5. What did NASA learn it needed to change as a result of the *Challenger* disaster?** (cause and effect) *NASA learned it was launching too often, and that it needed better communication, testing, and decision-making processes. NASA also had its solid rocket boosters redesigned.*
- 6. The root *spect-* means “to look at or examine.” Find two words in the article with the root *spect-* and use context clues to figure out the meaning of the words. Can you think of any**

**other spect- words?** (vocabulary) 1. "... crowds gathered outside, eyes cast to the sky to watch what would surely be a thrilling **spectacle**." Spectacle means "a visually striking performance or display." 2. "Down on the ground, **spectators** watched in confusion..." Spectator means "a person who watches at a show, game, or other event." Other spect- words include spectacular, spectacles, perspective, inspector, retrospect, and spectrum.

### Critical-Thinking Questions

(10 minutes)

The following questions can be shared in printable or interactive form.

1. **According to Lewis, how much interest did the public have in space exploration at the time of the *Challenger* mission? How do you think the public's interest then compares with the public's interest in space exploration today?** *Lewis explains that the Challenger mission completely captured the public's interest and attention. Students may say that today, NASA's missions continue to capture public interest, such as the excitement surrounding the launch of the James Webb Telescope (Hubble's successor) and DART (Double Asteroid Redirection Test) spacecraft this year. Additionally, today there are multiple private companies (Blue Origin, Virgin Galactic, and SpaceX, for example) achieving feats in space travel, including taking private civilians into space.*
2. **Consider the quote from President Ronald Reagan in the final lines of the article. What did he mean? How was the *Challenger* crew "pulling us into the future"? How have we continued to follow them into the future?** *Reagan meant there can be no great accomplishment or advancement without risk, and that it takes great courage to push boundaries and bring about change. When he said that the Challenger crew was "pulling us into the future," he meant that the crew's mission was helping humankind on our journey to greater knowledge and ability in the exploration of space. The nation continued to follow the Challenger crew into the future by not shutting down the space shuttle program; shock and sadness evolved into a renewed sense of determination, and another shuttle launched three years later. Today, we continue to follow the crew by continuing to push the boundaries of exploration and discovery, with plans to build a base on the moon and eventually travel to Mars.*
3. **In what ways, if any, do you think differently about space exploration after reading this article? Do you think space exploration is valuable?** *Answers will vary.*
4. **What do you think the future of space exploration holds?** *Answers will vary.*

### 3. Skill Building and Writing

30 minutes

- Have students complete the **Writing Planner: The Challenger Mission**. This activity will help them organize their ideas in preparation for the activity on page 10 in the printed magazine and at the bottom of the digital story page.
- Alternatively, have students choose a culminating task from the **Choice Board**, a menu of differentiated activities.

#### Connected readings from the *Scope* archives:

- Special Collection: [The Wonders of Space](#)

### Support for Multilingual Learners

These questions are designed to help students respond to the text at a level that's right for them.

#### Yes/No Questions

Ask students to demonstrate comprehension with a very simple answer.

1. Is the weather usually cold in Florida? *No, it isn't.*
2. Was Christa McAuliffe an astronaut? *No, she wasn't.*
3. Had *Challenger* ever been to space before? *Yes, it had.*
4. In the history of NASA, had anyone ever died in flight before the *Challenger* disaster? *No, they hadn't.*
5. Was the public watching the *Challenger's* launch? *Yes, it was.*

#### Either/Or Questions

Encourage students to use language from the question in their answer.

1. Did human spaceflight begin thousands of years ago or in the 1960s? *Spaceflight began in the 1960s.*
2. Were the shuttles' rockets destroyed after each launch or reused? *The rockets were pulled from the water, studied, and reused.*
3. Did the Thiokol engineers feel worried or excited about the *Challenger's* launch? *The Thiokol engineers felt worried about the Challenger's launch.*
4. Did NASA listen to the engineers' warnings or ignore them? *NASA ignored the engineers' warnings and asked Thiokol to change its recommendation against launching.*
5. After the *Challenger* tragedy, did the space shuttle program end or continue? *The space shuttle program continued until 2011.*

### Short-Answer Questions

Challenge students to produce simple answers on their own.

1. What was the cause of the catastrophe? *The cause of the catastrophe was a failure in one of the rocket boosters. An O-ring meant to keep burning fuel from leaking became brittle in the cold weather and stopped working.*
2. What did NASA learn it needed to change? *NASA learned it was launching too often and that it needed better communication, testing, and decision making. NASA also redesigned its solid rocket boosters.*

### Language-Acquisition Springboard: Practice reading punctuation to improve fluency.

1. Pair students up and have them take turns saying these lines to each other: "I have wonderful news!" And "Really? What's your news?" Discuss the natural way to speak a line that ends with an exclamation point (with strong feeling) and a line that ends with a question mark (voice goes up in pitch at the end). Next, have students practice saying these lines from the article:
  - "Just imagine! A teacher going to space!"
  - "How could this have happened?"
  - "Our earliest ancestors surely asked: What are those dots of twinkling light? What is that glowing orange ball that warms our days? And why does it disappear every evening?"
  - "Would a space shuttle ever fly again?"
2. Explain that italics are letters that slant to the right and are used in many ways. In this article they are used in two ways: to emphasize certain words, and for names of vehicles such as trains, ships, and spaceships—in this case, the space shuttle *Challenger*. Practice saying the following lines from the article, reading the italicized words with more emphasis than the rest of the words in that statement as appropriate.
  - "But there *was* something unique about this mission."
  - "At 11:38 a.m., *Challenger's* rockets fired."
  - "Now on the phone with NASA, the Thiokol engineers were clear: *Do not launch.*"
  - "As one astronaut put it, 'Don't prove that you're *not* ready for launch. Prove that you are.'"
  - "But the *Challenger* tragedy has not been forgotten."