

Questions in the Ice

Use questions before, during, and after reading to guide understanding.

7.5.B "generate questions about text before, during, and after reading to deepen understanding and gain information;"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Before reading, write one question beside the title. As you read, circle one detail in each paragraph that makes you curious and write a question beside it, then star the question you still have after reading.

Ice Cores: Frozen Records

- ① In a storage room colder than a winter night, scientists keep long cylinders of ice called ice cores. Teams drill these cores from glaciers in Greenland and Antarctica, pulling up layers that formed as snow fell and hardened over thousands of years. Tiny bubbles trapped in each layer hold samples of ancient air. Dust, ash, and sea salt are also sealed inside. By studying a core from top to bottom, researchers can compare recent conditions with much older ones.
- ② One layer can record a major event. When a volcano erupts, ash may settle on snow far from the eruption. Scientists have identified chemical traces linked to the 1815 eruption of Mount Tambora in ice from Antarctica. That eruption sent particles into the atmosphere and was followed by unusually cold weather in some regions. Other layers contain extra dust, which can suggest drier, windier conditions. Researchers do not treat one clue as a complete answer. They compare ice evidence with tree rings, written records, and other climate data.
- ③ Ice cores cannot tell scientists everything about the past. A core comes from one place, so its record may not match conditions everywhere. The deepest ice is also difficult to date precisely because layers can thin, bend, or mix under great pressure. Even so, ice cores help scientists ask better questions about Earth's climate system. For example, they can investigate how greenhouse gas levels changed alongside temperature over long periods. The evidence becomes most useful when scientists explain what it shows, what it cannot show, and what they need to investigate next.

2 ANSWER WITH EVIDENCE _____ Use the passage

- 1** Before you read, what question could the title and opening paragraph lead you to ask? Write the question, then answer it after reading.

- 2** While reading paragraph 2, write a question that helps you understand why researchers use evidence other than ice cores. Then answer your question.

- 3** After reading paragraph 3, write a question about one limit of ice cores. Then answer your question using the passage.

- 4** Write a question that connects the evidence in paragraph 2 with the caution in paragraph 3. Then answer it using both paragraphs.

3 YOUR TURN _____ Your own words

Choose a nonfiction topic you want to learn about. Write one before-reading question, two during-reading questions, and one after-reading question. Each question must seek different information.

PART 1 • READ AND MARK

Before reading, write one question beside the title. As you read, circle one detail in each paragraph that makes you curious and write a question beside it, then star the question you still have after reading. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Before you read, what question could the title and opening paragraph lead you to ask? Write the question, then answer it after reading.	Question: What can ice cores reveal about the past? Answer: They preserve ancient air and materials that researchers use to compare past and recent conditions.
2	While reading paragraph 2, write a question that helps you understand why researchers use evidence other than ice cores. Then answer your question.	Question: Why do researchers compare ice-core evidence with other sources? Answer: One clue is not a complete answer, so they also use tree rings, written records, and other climate data.
3	After reading paragraph 3, write a question about one limit of ice cores. Then answer your question using the passage.	Question: Why might an ice core not represent climate conditions everywhere? Answer: A core comes from one place, so its record may not match conditions in other places.
4	Write a question that connects the evidence in paragraph 2 with the caution in paragraph 3. Then answer it using both paragraphs.	Question: Why is one ash or dust layer not enough to explain past climate? Answer: A single clue may be incomplete, and ice from one place may not show conditions everywhere, so scientists compare several kinds of evidence.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Topic: city trees. Before reading: What benefits might trees provide in a city? During reading: How do trees lower temperatures near streets? During reading: What limits where a city can plant trees? After reading: Which planting plan would help neighborhoods with the least shade, and why?

Accept varied questions when they fit the stated reading stage and can be answered or investigated with the text. Strong responses use specific details from the passage and show that the student notices both evidence and limits.