When Reefs Turn Pale

Track how one scientific term gains meaning across an informational text.

CCSS.ELA-Literacy.RI.11-12.4 "Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g...."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline every use of bleaching or bleached, circle nearby words that define or add meaning to the term, and write 1, 2, or 3 beside each stage of its meaning. This will help you track how the author develops bleaching from a biological process into a broader warning signal.

Bleaching as a Signal

1 On a healthy reef, coral colonies can look like branching antlers, rounded boulders, or rippling fans. Their bright colors do not come mainly from the coral animal itself. Tiny algae live inside coral tissues and use sunlight to make food. In return, the coral gives the algae shelter and nutrients. Scientists call this partnership symbiosis. In this setting, bleaching is a technical term: under stress, a coral expels many of its algae, revealing the pale calcium carbonate skeleton beneath its transparent tissue at the surface.

2 A heat wave can trigger bleaching when unusually warm water disrupts the algae's work. Bleached coral is not automatically dead, because some colonies regain algae if cooler conditions return soon. Yet the word carries a growing warning. At first, bleaching names a biological process, not a color choice or a cleaning action. As marine biologists use the term across a reef, it also measures strain: widespread bleaching shows that many colonies are losing an essential partner at the same time. The pale reef becomes evidence of a damaged relationship.

3 In reports about the Great Barrier Reef, researchers often compare bleaching events across years and locations. This use gives bleaching a second technical role: it becomes data that can reveal patterns in ocean heat, water quality, and recovery. The term also gains connotative force. A "bleaching event" sounds clinical, but repeated events can suggest a reef pushed toward collapse. By ending with recovery, scientists refine the term again. Bleaching is neither a final verdict nor a harmless change in appearance. It is a signal whose meaning depends on scale, duration, and what happens afterward.

2 ANSWER WITH EVIDENCE

Use the passage

1. What does bleaching mean as a technical term in paragraph 1?

2. Which two everyday meanings does paragraph 2 rule out for bleaching, and what meaning does the author give the term instead?

3. How does the phrase "widespread bleaching" expand the meaning of the term?

4. How does the final paragraph refine bleaching into a "signal"? Name the three factors that affect how the signal should be understood.

3 YOUR TURN

Your own words

Write 50 to 70 words explaining how the phrase "damaged relationship" changes the reader's understanding of bleaching. Use at least two details from different paragraphs, and explain why this wording is more meaningful than simply calling the reef pale.

ANSWER KEY

When Reefs Turn Pale

HIGH SCHOOL · RI.11-12.4

PART 1 · READ AND MARK

Underline every use of bleaching or bleached, circle nearby words that define or add meaning to the term, and write 1, 2, or 3 beside each stage of its meaning. This will help you track how the author develops bleaching from a biological process into a broader warning signal. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What does bleaching mean as a technical term in paragraph 1?	**It is the process in which a stressed coral expels many of the algae living in its tissues, exposing its pale skeleton.**
2	Which two everyday meanings does paragraph 2 rule out for bleaching, and what meaning does the author give the term instead?	**It is not a color choice or a cleaning action. It is a biological process caused by stress that disrupts the coral's partnership with algae.**
3	How does the phrase "widespread bleaching" expand the meaning of the term?	**It makes bleaching a measure of reef-wide strain, showing that many coral colonies are losing an essential partner at once.**
4	How does the final paragraph refine bleaching into a "signal"? Name the three factors that affect how the signal should be understood.	**Bleaching becomes evidence used to interpret reef conditions over time. Its meaning depends on scale, duration, and what happens afterward, including recovery.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Calling the reef a "damaged relationship" shows that bleaching is more than a pale appearance. Paragraph 1 explains that coral and algae exchange food, shelter, and nutrients. Paragraph 2 says bleaching means colonies lose an essential partner. The phrase makes the reef seem injured because a cooperative system, not just its color, has been disrupted.

For the open task, accept varied wording if the response uses details from two paragraphs and explains the disrupted coral-algae partnership.