Evidence in Action

Read how scientists use evidence and respectful disagreement to strengthen a claim.

7.3.C "engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each scientific claim, circle each piece of empirical evidence, and number the sentences that respectfully question or improve the investigation. These marks help you evaluate how evidence and explanations support an argument.

Should the Cafeteria Compost?

1 At Riverbend Middle School, the science club proposed placing a compost bin near the cafeteria. The students claimed that composting fruit peels and vegetable scraps would reduce the mass of trash sent to the landfill. They explained that decomposers, such as bacteria and fungi, break down organic matter. However, club members knew that a scientific claim needs more than a reasonable explanation. They planned to collect evidence by weighing cafeteria trash for five days before the bin was installed and for five days after it was installed.

2 The measurements supported part of the claim. Before composting, the cafeteria sent an average of 18 kilograms of trash each day to the landfill. After composting began, that average was 14 kilograms. The club also checked the compost bin and found mostly food scraps, not plastic wrappers. Maya stated, "The decrease fits our explanation because food scraps were separated and could be decomposed instead of thrown away." She called the results evidence, but she did not say composting was the only possible cause of the decrease.

3 Jordan disagreed respectfully. He said, "I agree that the measurements show less landfill trash, but we should test whether something else changed." He noted that fewer students bought lunch during the second week because a field trip occurred. Jordan suggested weighing trash for several more weeks and recording how many students ate cafeteria lunch each day. Maya replied that this additional evidence could strengthen or revise the club's claim. Both students focused on the claim, the evidence, and the limits of the investigation instead of criticizing each other.

2 ANSWER WITH EVIDENCE

Use the passage

1. What claim did the science club make about composting?

2. What measurement evidence supported the club's claim? Include both daily averages.

3. How did Maya use a scientific explanation to connect the results to the claim?

4. What possible alternative cause did Jordan identify, and what additional evidence did he suggest collecting?

3 YOUR TURN

Your own words

A school installs a bottle-filling station. During one week before installation, students throw away 96 single-use bottles. During one week after installation, they throw away 61. Write 4 or 5 sentences that make a claim, use the data as evidence, explain the result, respectfully name another possible cause, and suggest one more kind of evidence to collect.

ANSWER KEY

Evidence in Action

GRADE 7 · TEKS 7.3.C

PART 1 · READ AND MARK

Underline each scientific claim, circle each piece of empirical evidence, and number the sentences that respectfully question or improve the investigation. These marks help you evaluate how evidence and explanations support an argument. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What claim did the science club make about composting?	**The club claimed that composting fruit peels and vegetable scraps would reduce the mass of trash sent to the landfill.**
2	What measurement evidence supported the club's claim? Include both daily averages.	**Before composting, the cafeteria sent an average of 18 kilograms of trash to the landfill each day. After composting began, the average was 14 kilograms each day.**
3	How did Maya use a scientific explanation to connect the results to the claim?	**Maya explained that food scraps were separated and could be decomposed instead of being thrown away, which fit the decrease in landfill trash.**
4	What possible alternative cause did Jordan identify, and what additional evidence did he suggest collecting?	**Jordan noted that fewer students bought lunch during the second week because of a field trip. He suggested weighing trash for several more weeks and recording how many students ate cafeteria lunch each day.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I claim that the bottle-filling station may have reduced single-use bottle waste. The count fell from 96 bottles to 61 bottles, which supports this claim. This fits the explanation that students could refill reusable bottles instead of buying bottled drinks. I agree that another change, such as a school event, might have affected the count. We should repeat the counts for several weeks and record attendance.

Accept equivalent claims that accurately use the two bottle counts, include a reasonable scientific explanation, respectfully identify a possible alternative factor, and propose relevant additional evidence. Students may use different wording when identifying claims, evidence, and limits in the passage.