Measured Conclusions

Analyze how a scientific report uses evidence, precision, and restraint.

CCSS.ELA-Literacy.WHST.9-10.2e "Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline statements that report evidence or limit a claim. Circle scientific terms, measurements, or units that help the report sound formal and objective.

Willow Creek Water Investigation

1 On April 18, environmental science students tested water from Willow Creek at two locations near the school. The investigation examined temperature, pH, turbidity, and nitrate concentration because these measures can indicate changes in stream conditions. Teams collected samples at 9:00 a.m. using clean containers and recorded observations on field-data sheets. The upstream site had a rocky bank and shaded water, while the downstream site was near a storm-drain outlet. To reduce variation, each team followed the same sampling procedure and tested three samples from each location.

2 Results showed a mean pH of 7.2 upstream and 7.1 downstream, values close to neutral. Mean water temperatures were 12.4°C upstream and 13.0°C downstream. Turbidity measured 4 nephelometric turbidity units, or NTU, upstream and 18 NTU downstream. The downstream samples also contained 3.6 milligrams per liter of nitrate, compared with 1.4 milligrams per liter upstream. These results describe conditions observed during one morning in April. They do not show whether the storm drain caused the differences, because rainfall, flow rate, and other factors were not measured.

3 The data support a limited conclusion: the downstream location had higher turbidity, nitrate concentration, and temperature than the upstream location during the sampling period. A future investigation could collect samples after dry and rainy weather, measure stream flow, and repeat testing across several weeks. Researchers could then compare patterns rather than rely on a single set of observations. In a formal report, this conclusion should be presented without claims such as "the creek is ruined" or "the drain is definitely polluting the water." Those statements express judgments or certainty that the collected data cannot establish.

2 ANSWER WITH EVIDENCE

Use the passage

1. Copy the sentence that explains why the results cannot prove that the storm drain caused the differences. How does this sentence help maintain an objective tone?

2. Identify two scientific terms, measurements, or units from the report. Explain how one of them follows the conventions of a scientific report.

3. What limited conclusion does the data support? State the conclusion using the comparison given in the passage.

4. Why does the report reject the statement “the creek is ruined”? Use the passage's explanation.

3 YOUR TURN

Your own words

Write a three-sentence conclusion for a bean-seed investigation. Use at least one numerical result, maintain a formal and objective tone, and include one limitation or next step before making a broad claim about light and germination.

ANSWER KEY

Measured Conclusions

HIGH SCHOOL · WHST.9-10.2e

PART 1 · READ AND MARK

Underline statements that report evidence or limit a claim. Circle scientific terms, measurements, or units that help the report sound formal and objective. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Copy the sentence that explains why the results cannot prove that the storm drain caused the differences. How does this sentence help maintain an objective tone?	**"They do not show whether the storm drain caused the differences, because rainfall, flow rate, and other factors were not measured." It maintains objectivity by recognizing limits in the evidence and avoiding an unsupported causal claim.**
2	Identify two scientific terms, measurements, or units from the report. Explain how one of them follows the conventions of a scientific report.	**Answers may include pH, turbidity, nitrate concentration, mean, °C, NTU, or milligrams per liter. These precise terms and units communicate measured data clearly and formally.**
3	What limited conclusion does the data support? State the conclusion using the comparison given in the passage.	**During the sampling period, the downstream location had higher turbidity, nitrate concentration, and temperature than the upstream location.**
4	Why does the report reject the statement "the creek is ruined"? Use the passage's explanation.	**The statement is a judgment that expresses more certainty than the collected data can establish. The investigation measured conditions during only one morning and did not measure other factors.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

In a five-day investigation, 18 of 20 bean seeds placed near a window germinated, compared with 11 of 20 seeds kept in a cabinet. The results indicate that the window group germinated more often under the conditions tested. Additional trials should control temperature and use more seeds before drawing a broader conclusion about light.

Accept responses that use precise evidence, avoid emotional or absolute claims, and acknowledge a reasonable limitation or need for further investigation. Students may use different formal scientific vocabulary if their wording remains accurate and objective.