Tracing Snow's Reasoning

Six critical-thinking steps in a historical investigation

P.1.9 "Understand the six steps involved in critical thinking: knowledge, comprehension, application, analysis, synthesis, and evaluation."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the six critical-thinking steps in paragraph 1, then circle three details from Snow's investigation and write beside each one the step it helps you practice.

What Caused the Broad Street Outbreak?

1. Critical thinking can move through six connected steps, though a thinker may return to earlier steps. Knowledge means gathering accurate facts and naming what is known. Comprehension means explaining those facts in your own words. Application puts an idea to work in a new situation. Analysis separates evidence into parts and looks for patterns, differences, or missing information. Synthesis joins findings into a possible explanation or plan. Evaluation judges how well that explanation fits the evidence and what doubts remain. These steps are not a ladder that ends with certainty. A strong claim can change when a new source appears.

2. In 1854, cholera swept through a London neighborhood near Broad Street. Physician John Snow suspected contaminated drinking water, although many people at the time blamed foul air. He gathered the addresses of people who had died and examined where they lived in relation to neighborhood water pumps. Deaths clustered near the Broad Street pump, but proximity alone did not prove that its water caused the illness. Snow also looked for exceptions. Workers at a nearby brewery rarely drank from the pump because they had another source of drinks. Snow treated those differences as clues rather than ignoring them.

3. A nearby workhouse presented another useful contrast: it had its own water supply and relatively few cholera deaths. Snow combined the pattern of deaths with these contrasts to argue that water from the Broad Street pump was spreading cholera. Officials removed the pump handle, but the outbreak was already fading, so the handle's removal alone cannot prove his claim. His case also depended on comparing groups with different water sources. To judge it fairly, a reader should ask whether the evidence supports his explanation better than the foul-air theory and what records might still be missing.

2 ANSWER WITH EVIDENCE

Use the passage

1. Use knowledge and comprehension: Name one fact Snow gathered, then explain in your own words what the pattern of deaths showed.

2. Apply Snow's water idea to the workhouse. What would you predict about its cholera deaths, and what does the passage report?

3. Analyze the brewery and workhouse evidence. What different clue does each provide, and what do the clues have in common?

4. Synthesize Snow's evidence into one claim. Then evaluate why removing the pump handle alone cannot prove that claim.

3 YOUR TURN

Your own words

A town museum has two records: a 1902 newspaper says a bridge opened that year, while a 1903 city report calls 1903 its opening year. Write six sentences, one for each critical-thinking step in order, to plan an investigation and recommend what the museum should print.

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PART 1 · READ AND MARK

Underline the six critical-thinking steps in paragraph 1, then circle three details from Snow's investigation and write beside each one the step it helps you practice. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Use knowledge and comprehension: Name one fact Snow gathered, then explain in your own words what the pattern of deaths showed.	**Snow gathered the addresses of people who had died. Many deaths occurred near the Broad Street pump, though that pattern alone did not prove the water caused them.**
2	Apply Snow's water idea to the workhouse. What would you predict about its cholera deaths, and what does the passage report?	**Because the workhouse had its own water supply, I would predict relatively few deaths if Snow's idea was right. The passage reports relatively few deaths there.**
3	Analyze the brewery and workhouse evidence. What different clue does each provide, and what do the clues have in common?	**Brewery workers rarely drank from the Broad Street pump. The workhouse used its own water supply and had relatively few deaths. Both clues concern people who did not rely on the pump's water.**
4	Synthesize Snow's evidence into one claim. Then evaluate why removing the pump handle alone cannot prove that claim.	**The death cluster and the groups using other water sources support Snow's claim that the pump's water spread cholera. The outbreak was already fading when officials removed the handle.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Knowledge: I would record that the newspaper says 1902 and the city report says 1903. Comprehension: I would explain that the sources may use “opened” to mean different events. Application: I would use a clear definition of “opened to the public” to examine both records. Analysis: I would compare the dates, event details, and purposes of the two records. Synthesis: I would combine those findings with a dated ceremony notice, if one exists, to propose an opening year. Evaluation: Until stronger evidence settles the conflict, I would recommend printing “Opening year disputed: 1902 or 1903.”

For the marking task, accept circles labeled with a defensible step, even when a detail supports more than one. For the open task, look for six distinct steps in order and a recommendation that does not treat either conflicting record as conclusive.