

Evidence Changes Decisions

Read how research methods, source checks, and costs shape public choices.

8.4 "Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society..."

NAME _____ DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each research method or piece of evidence in the passage. Circle details that show how people judged source credibility or weighed costs and benefits.

Research, Water, and Public Health

- ① In 2014, pediatrician Dr. Mona Hanna-Attisha noticed that some children in Flint, Michigan, had higher blood lead levels after the city changed its water source. She and her team compared blood tests from before and after the switch. They checked patterns by neighborhood and age, then asked other experts to review their work. Their findings challenged official claims that the water was safe. The research helped public health workers and families understand that lead exposure can harm children's developing brains.
- ② One study is not the end of scientific work. City water tests measured lead at specific taps, while the team's blood tests measured lead already absorbed by children. Both methods answered different questions. News reports helped residents learn quickly, but a report that quotes no data is weaker evidence than a study that explains its methods. Scientists compared results with state health records and independent reviews. Using several sources made the conclusion more credible and helped guide later testing.
- ③ Research also shaped decisions about pipes. Replacing lead service lines costs money and can disrupt streets, but preventing exposure can reduce health harms and future medical and educational costs. Today, engineers test water systems, and public health researchers track exposure. A student exploring these STEM careers could use a library database, a university or professional organization website, and an interview with a water engineer. Comparing these resources helps the student judge which information is current, supported, and useful.

2

ANSWER WITH EVIDENCE

Use the passage

1

What steps did Dr. Hanna-Attisha’s team use to investigate the possible lead exposure?

2

Why did city water tests and children’s blood tests provide different kinds of evidence?

3

According to the passage, what makes a study more credible than a report that quotes no data?

4

Give one cost and one benefit of replacing lead service lines.

3

YOUR TURN

Your own words

Choose a STEM career that could help with a science-related need in your community. In the table, compare three different resource types you could use to investigate that career, including the evidence or method, a credibility check, and the cost or benefit of using each resource.

CAREER AND RESOURCE TYPE	EVIDENCE OR METHOD	CREDIBILITY CHECK	COST OR BENEFIT OF USING IT

PART 1 • READ AND MARK

Underline each research method or piece of evidence in the passage. Circle details that show how people judged source credibility or weighed costs and benefits. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What steps did Dr. Hanna-Attisha's team use to investigate the possible lead exposure?	They compared blood tests from before and after the water-source change, checked patterns by neighborhood and age, and had other experts review their work.
2	Why did city water tests and children's blood tests provide different kinds of evidence?	Water tests measured lead at specific taps. Blood tests measured lead that children had already absorbed, so the methods answered different questions.
3	According to the passage, what makes a study more credible than a report that quotes no data?	A more credible study explains its methods and can be compared with records, independent reviews, and other sources.
4	Give one cost and one benefit of replacing lead service lines.	A cost is spending money and disrupting streets. A benefit is reducing lead exposure and possible future health, medical, and educational costs.

PART 3 • YOUR TURN (SAMPLE ANSWER)

CAREER AND RESOURCE TYPE	EVIDENCE OR METHOD	CREDIBILITY CHECK	COST OR BENEFIT OF USING IT
Environmental engineer, professional organization career profile	The profile explains that environmental engineers design systems that reduce pollution and lists required education.	The organization represents trained engineers, but I would check the date and compare its claims with another source.	Free online access makes it a cost-effective first source for exploring this career.
Environmental engineer, water engineer mentor interview	The engineer describes how the utility collects water samples and checks results.	A mentor has firsthand knowledge, but one interview may not represent all jobs, so I would compare it with published data.	A free interview takes time but provides local details that can guide a job-shadow request.
Environmental engineer, library database article	The article reports research on removing lead from drinking-water systems and describes the study's testing method.	The article gives methods and sources, so it is stronger evidence than an unsupported post.	Library database access is free and helps me judge whether this career addresses a community need.

Accept equivalent descriptions of the investigation steps, differences between the two testing methods, credibility checks, and cost-benefit reasoning. For the table, accept any relevant STEM career and three distinct appropriate resource types when each row includes a reasonable evidence, credibility, and cost-benefit evaluation.