

Water Evidence Decisions

Use research evidence, costs, and career resources to make a sound choice.

7.4 "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 details that describe a research method or evidence source. Circle benefits and costs, then number the STEM career resources in the order you find them.

Investigating Water Safety

- ① In 1976, microbiologist Dr. Mary Guinan helped investigate an unusual illness among people attending an American Legion meeting. Teams collected patient information, tested samples, compared patterns, and ruled out several possible causes. Their work identified Legionnaires' disease, a bacterial illness that can spread through water droplets. The investigation changed scientific thought because researchers recognized a new disease and learned that buildings' water systems could need monitoring. Guinan's contribution also shows why many kinds of scientists and health workers are needed in research.
- ② Today, a city considering new water-system sensors should examine more than a company advertisement. A peer-reviewed study may explain how researchers tested sensors, how many sites they sampled, and limits in the results. A public health department report may provide local illness data. A company website can describe price and warranty, but it may favor its own product. Comparing dates, authors, methods, and evidence helps a decision maker judge credibility and accuracy rather than trusting one source.
- ③ Cost-effectiveness asks whether a benefit is worth the money and other costs. Sensors might find a problem early and protect health, yet a city must also consider purchase price, training, repairs, and whether the sensors work reliably. Research can guide choices, but it does not make values-based decisions by itself. Students exploring STEM careers can consult a librarian, visit a science museum, read a professional organization's career page, or interview an engineer. Each resource can reveal different evidence about a career's daily work and preparation.

2 ANSWER WITH EVIDENCE Use the passage

- 1 How did the 1976 investigation change scientific thought, and what action could it lead buildings to take?

- 2 Which source in the passage would best help you evaluate how sensors were tested? Name two details you would look for in that source.

- 3 State one possible benefit of water-system sensors and two costs a city should consider besides the purchase price.

- 4 Name two resources a student could use to explore a STEM career. What kinds of career information can those resources provide?

3 YOUR TURN Your own words

Choose a school decision about water safety or water use, such as installing a bottle-refill station or using water-quality sensors. Write exactly six sentences that name two sources you would use, evaluate a method or possible bias in one source, give one benefit and two costs, and state a recommendation.

PART 1 • READ AND MARK

Underline details that describe a research method or evidence source. Circle benefits and costs, then number the STEM career resources in the order you find them. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How did the 1976 investigation change scientific thought, and what action could it lead buildings to take?	It identified a new bacterial disease and showed that building water systems may need monitoring.
2	Which source in the passage would best help you evaluate how sensors were tested? Name two details you would look for in that source.	A peer-reviewed study. Look for how the sensors were tested, how many sites were sampled, and limits in the results.
3	State one possible benefit of water-system sensors and two costs a city should consider besides the purchase price.	A benefit is finding a problem early and protecting health. Other costs include training and repairs.
4	Name two resources a student could use to explore a STEM career. What kinds of career information can those resources provide?	Answers may name any two: a librarian, science museum, professional organization career page, or engineer interview. They can provide evidence about daily work and preparation.

PART 3 • YOUR TURN (SAMPLE ANSWER)

I would investigate whether our school should install a bottle-refill station. I would use a district water-quality report because it gives local test results and names its testing method. I would also use the manufacturer's price sheet for installation and maintenance costs, but I would check its claims because the company sells the station. A benefit could be less use of disposable bottles. Costs include buying the station, plumbing work, filter replacements, and repairs. If the local report shows safe water and the total cost fits the budget, I would recommend the station.

Accept equivalent answers that accurately use details from the passage. For the open response, accept reasonable school water decisions when the student includes two relevant sources, source evaluation, a benefit, two costs, and a supported recommendation.