Research Changes Lives

Track how evidence, decisions, and people shape science and society.

6.4.A "relate the impact of past and current research on scientific thought and society, including the process of science, cost-benefit analysis, and contributions of diverse scientists as related to the content;"

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline research actions or evidence, circle effects on scientific thought or society, and write C beside one cost and B beside one benefit.

From Water Pumps to Vaccines

1 In 1854, physician John Snow investigated a deadly cholera outbreak in London. He talked with families, recorded where people became sick, and compared those locations with water sources. His evidence pointed to a public water pump on Broad Street. After officials removed the pump handle, fewer new cases were reported. Snow did not know about the cholera bacterium yet, but his careful observations changed scientific thought. They helped people see that disease could spread through contaminated water, not only through bad air.

2 More recently, immunologist Dr. Kizzmekia Corbett helped lead research that designed an mRNA vaccine for COVID-19. Her team used earlier research on coronaviruses, tested vaccine ideas in laboratories, and studied results from clinical trials with volunteers. The trials checked whether the vaccine created an immune response and watched for side effects. This process gave scientists evidence before the vaccine was offered widely. The research showed how work by a Black woman scientist and many collaborators can shape public health. Vaccination lowered the risk of severe illness for many people.

3 Research decisions also involve cost-benefit analysis. Scientists, community members, and leaders ask what a choice may cost and what good it may do. For example, vaccine research requires money, time, volunteer participation, and careful safety monitoring. Possible benefits include fewer hospital visits, fewer missed school days, and protection for people at high risk. A fair decision compares evidence about benefits and risks, including rare side effects. As new evidence appears, recommendations can change. This is not a failure of science. It shows that scientific ideas improve when people test claims and examine new results.

2 ANSWER WITH EVIDENCE

Use the passage

1. What did John Snow do to gather evidence, and how did his findings change an idea about disease?

2. Why did Corbett's team use clinical trials before the vaccine was offered widely?

3. Name one cost of vaccine research and one benefit described in the passage.

4. Why can changing recommendations be a sign that science is working?

3 YOUR TURN

Your own words

A city is considering research on a reusable water-bottle filter that may remove lead from tap water. Write five sentences explaining a research question, a fair way to gather evidence, one cost or risk, one benefit, and how people with different backgrounds could help the city make a fair decision.

ANSWER KEY

Research Changes Lives

GRADE 6 · TEKS 6.4.A

PART 1 · READ AND MARK

Underline research actions or evidence, circle effects on scientific thought or society, and write C beside one cost and B beside one benefit. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What did John Snow do to gather evidence, and how did his findings change an idea about disease?	**He recorded where people were sick and compared those places with water sources. His findings supported the idea that cholera could spread through contaminated water rather than only through bad air.**
2	Why did Corbett's team use clinical trials before the vaccine was offered widely?	**The trials provided evidence about whether the vaccine created an immune response and allowed researchers to watch for side effects.**
3	Name one cost of vaccine research and one benefit described in the passage.	**Costs include money, time, volunteer participation, or safety monitoring. Benefits include fewer hospital visits, fewer missed school days, or protection for people at high risk.**
4	Why can changing recommendations be a sign that science is working?	**Recommendations can change when new evidence appears. This shows that scientists test claims and improve ideas using new results.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

A team could ask whether a new reusable water-bottle filter removes lead from tap water. It could test filtered and unfiltered water from many homes and have an independent lab measure lead levels. The project costs money for testing and filters, but it could reduce lead exposure. Scientists and community members with different backgrounds can help choose fair test locations and notice who needs the filter most. If the results show reliable lead reduction and safety, the city could fund the filters.

Accept equivalent evidence-based answers from the passage. For Part 3, accept reasonable research plans that include all five requested elements and connect evidence to a community decision.