

Clean Water Changes

Trace how discoveries and solutions can change science and society.

4.4.A “explain how scientific discoveries and innovative solutions to problems impact science and society; and”

NAME _____

DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each scientific discovery or solution, circle each effect on people or communities, and number the links that show how one led to another.

Germ, Water, and Health

- ① In the 1800s, doctors learned that tiny living things called germs can cause disease. This scientific discovery changed how people thought about sickness. Before then, many people did not know why illnesses spread. As evidence grew, doctors began washing their hands and cleaning tools. Hospitals that used these practices could help stop infections from passing between patients.
- ② Cities also faced a problem when dirty water carried germs into homes. Engineers designed water treatment systems that remove dirt and kill many harmful germs. One method adds a carefully measured amount of chlorine to water. Scientists test water samples to check whether the system works. When a city provides cleaner water, fewer people may get sick, and families can use water more safely for drinking and cooking.
- ③ Discoveries and solutions can affect each other. The germ discovery gave engineers a reason to improve water systems. In return, clean-water systems gave scientists a way to study how fewer germs can protect health. These changes affected society by making daily life safer. They also led to new jobs, such as testing water and maintaining pipes. People must still test systems and use chemicals carefully.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 How did the discovery about germs change what doctors did in hospitals?

2 What problem did engineers solve with water treatment systems, and how did the systems help solve it?

3 Name two ways cleaner water affected society.

4 Explain how the germ discovery and clean-water systems affected each other.

3 YOUR TURN _____ Your own words

Choose a community problem. In 3 or 4 sentences, describe a scientific discovery that could help people understand the problem, an innovative solution, and one impact on science and one impact on society.

PART 1 • READ AND MARK

Underline each scientific discovery or solution, circle each effect on people or communities, and number the links that show how one led to another. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How did the discovery about germs change what doctors did in hospitals?	Doctors began washing their hands and cleaning tools because they learned that germs can cause disease and spread infections.
2	What problem did engineers solve with water treatment systems, and how did the systems help solve it?	Engineers addressed dirty water carrying germs into homes. Treatment systems remove dirt and kill many harmful germs, including by using carefully measured chlorine.
3	Name two ways cleaner water affected society.	Fewer people may get sick, and families can use water more safely for drinking and cooking. The systems also created jobs such as water testing and pipe maintenance.
4	Explain how the germ discovery and clean-water systems affected each other.	The discovery that germs cause disease gave engineers a reason to improve water systems. The clean-water systems then gave scientists a way to study how fewer germs can protect health.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Scientists discover that mosquito larvae grow in standing water. Engineers design rain barrels with tight lids and fine screens that keep mosquitoes out while collecting water. Scientists can test which barrel features block the most mosquitoes. Families can store rainwater and may have fewer mosquitoes near their homes.

Accept equivalent explanations that connect a discovery or solution to a specific effect on science or society. For Part 3, accept realistic examples that include all four parts: problem, discovery, solution, and impacts on science and society.