Test the Explanation

How testing ideas changed what people knew about nature

SS24.8.17a "Explain the significance of the development of the scientific method and its implications for new discoveries and ideas."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the explanation people first believed, circle evidence from the tests, and number two ways testing changed ideas about nature.

Where Did the Maggots Come From?

1 In seventeenth-century Europe, many people believed that living things could appear from nonliving matter. If maggots appeared on rotting meat, it seemed that meat had produced them. Italian physician Francesco Redi questioned this explanation. He had noticed that flies visited meat before maggots appeared. Instead of relying on what seemed obvious, he asked whether the flies mattered. His question reflects a growing approach to studying nature: propose an explanation, gather evidence through observation or testing, and change the explanation if the evidence does not support it.

2 In 1668, Redi placed meat in jars. He left some jars open and covered others with fine gauze that let air in but kept flies out. Maggots appeared on the meat in open jars, where flies could reach it. They did not appear on the meat in covered jars. In some cases, flies laid eggs on the gauze instead. By changing whether flies could touch the meat while allowing air into both groups, Redi tested a possible cause. His results supported the idea that maggots came from flies, not meat.

3 Redi's experiment did not settle every question about how life begins. Some people still thought tiny organisms could arise without parents. In the nineteenth century, Louis Pasteur used carefully designed tests with broth to show that airborne microbes, rather than the broth itself, explained new microbial growth. The development of the scientific method made discoveries like these more trustworthy because other investigators could examine the steps and repeat tests. It also changed how people treated accepted ideas: even an old explanation could be revised when a better explanation fit the evidence.

2 ANSWER WITH EVIDENCE

Use the passage

1. Why was Redi's question about flies an important step beyond the old explanation for maggots?

2. Why did Redi let air into both groups of jars while keeping flies out of one group?

3. How did Pasteur's tests extend the kind of change in ideas that Redi's test began?

4. Why could the development of the scientific method lead to new discoveries even when an old explanation was widely accepted?

3 YOUR TURN

Your own words

Choose a common claim about nature that is not in the passage. In four sentences, describe a fair test and explain how its results could make someone revise the claim.

ANSWER KEY

Test the Explanation

GRADE 8 · SS24.8.17a

PART 1 · READ AND MARK

Underline the explanation people first believed, circle evidence from the tests, and number two ways testing changed ideas about nature. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Why was Redi's question about flies an important step beyond the old explanation for maggots?	**Instead of accepting that meat produced maggots, Redi identified another possible cause that he could test.**
2	Why did Redi let air into both groups of jars while keeping flies out of one group?	**Keeping air in both groups helped him test whether access by flies, rather than the presence of air, explained the maggots.**
3	How did Pasteur's tests extend the kind of change in ideas that Redi's test began?	**Redi used a test to show that maggots came from flies rather than meat. Pasteur later used tests to show that airborne microbes, rather than broth itself, explained new microbial growth.**
4	Why could the development of the scientific method lead to new discoveries even when an old explanation was widely accepted?	**Investigators could test explanations, examine and repeat one another's work, and revise old ideas when a new explanation better fit the evidence.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would test the claim that talking to a plant helps it grow taller. I would give two similar plants the same water, soil, and light, but talk to only one for five minutes each day. After four weeks, I would measure their heights and repeat the test with more plants. If the talked-to plants did not grow taller in repeated tests, I would question the claim instead of trusting it just because people say it.

Accept other accurate explanations that connect testing and repeatable evidence to revising an idea. For Part 3, look for a test that changes one main condition, compares results, and explains how evidence could affect the claim.