Changing the View

How shared learning and new evidence reshaped science

MWH.C.2.4 "Evaluate the legacy of the Scientific Revolution on society, focusing on major theories and discoveries. Explain how the scientific method and new technologies, such as the telescope and microscope, led to new theories of the universe..."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline two observations made with instruments, circle one claim about planetary motion, and put a star beside a sentence showing how earlier scholarship shaped the Scientific Revolution.

Seeing More, Explaining More

1. A scholar in seventeenth-century Europe might calculate with numerals developed in India, including zero and a place-value system. Islamic scholars translated earlier works, expanded mathematical knowledge, and passed learning between regions. The physicist Ibn al-Haytham studied light through observation and experiments, arguing that light enters the eye rather than leaving it. Such work traveled through translation and teaching. The Scientific Revolution grew from this exchange of ideas, not from a sudden break with all earlier learning.

2. For centuries, many European scholars taught that Earth stood at the universe's center. Nicolaus Copernicus proposed instead that Earth and the other planets orbit the Sun. Galileo Galilei used an improved telescope to observe moons circling Jupiter and phases of Venus. These observations challenged the claim that everything circles Earth and supported a Sun-centered model. Galileo's evidence did not settle every question, but it showed how an instrument could put an accepted view to a public test.

3. The microscope also revealed things the unaided eye could not see: Robert Hooke described tiny compartments in cork as “cells.” Its discoveries changed ideas about living things, even though a microscope could not show planetary orbits. Isaac Newton later used laws of motion and universal gravitation to explain both falling objects and planets' paths. Testing predictions against observations became central to scientific inquiry. These changes widened scientific study, while disputes with religious and academic authorities showed that new evidence did not win acceptance automatically.

2 ANSWER WITH EVIDENCE

Use the passage

1. How did Copernicus's proposal and Galileo's observations challenge the Earth-centered view?

2. How did learning from India and Islamic scholars help lay a foundation for the Scientific Revolution?

3. Why did the microscope matter to scientific inquiry even though it could not show planetary orbits?

4. What did Newton's work connect, and why might evidence alone not have won immediate acceptance?

3 YOUR TURN

Your own words

A museum exhibit claims, “One telescope created modern science.” Write a four-sentence caption that challenges this claim. Include two different contributions from the passage, at least one that did not use a telescope, and explain why evidence or shared learning mattered.

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PART 1 · READ AND MARK

Underline two observations made with instruments, circle one claim about planetary motion, and put a star beside a sentence showing how earlier scholarship shaped the Scientific Revolution. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How did Copernicus's proposal and Galileo's observations challenge the Earth-centered view?	**Copernicus proposed that Earth orbits the Sun. Galileo observed moons orbiting Jupiter and phases of Venus, evidence that challenged the claim that everything circles Earth and supported a Sun-centered model.**
2	How did learning from India and Islamic scholars help lay a foundation for the Scientific Revolution?	**Indian numerals supplied zero and place value. Islamic scholars translated and expanded earlier learning, while Ibn al-Haytham used observations and experiments to study light.**
3	Why did the microscope matter to scientific inquiry even though it could not show planetary orbits?	**It revealed structures invisible to the unaided eye, such as the compartments Hooke saw in cork, and changed ideas about living things.**
4	What did Newton's work connect, and why might evidence alone not have won immediate acceptance?	**Newton's laws explained both falling objects and planetary paths. Disputes with religious and academic authorities could slow acceptance of new ideas.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

Galileo's telescope revealed moons orbiting Jupiter, challenging the idea that everything circles Earth. But Indian place-value numerals and Islamic scholars' translations helped knowledge travel and grow before Galileo's observations. Newton also used laws of motion and gravity to explain falling objects and planetary paths. Modern science developed through shared learning, new instruments, and tests of ideas, not through one telescope.

Accept accurate explanations that link a contribution to its effect, rather than naming a figure or invention alone. For the caption, look for four sentences, two distinct contributions, one without a telescope, and an explanation of evidence or shared learning.