

Beyond Your Eyes

Tools help people observe objects at very different sizes and distances.

SC.4.E.6.5 "Investigate how technology and tools help to extend the ability of humans to observe very small things and very large things."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each tool named in the passage. Circle the words that tell what the tool helps people observe, so you can connect each tool to its use.

Tools for Seeing More

- ① People cannot see everything with their eyes alone. A hand lens bends light so an object looks bigger. A microscope uses several lenses to make tiny details easier to observe. With a microscope, scientists can study the shapes of pollen grains, the parts of a plant cell, or the movement of a one-celled organism in a drop of pond water.
- ② For objects far from Earth, telescopes collect more light than eyes can collect. Their mirrors or lenses bring that light to a focus. This lets observers see faint, distant objects, such as planets, stars, and galaxies. Some telescopes orbit above Earth's atmosphere, where air does not blur or block as much light. These tools help scientists observe places humans cannot visit.
- ③ Tools do not make an object change size or move closer. Instead, they gather or bend light and turn it into an image or data people can study. Scientists choose a tool by asking what they need to observe. A microscope helps with tiny nearby details. A telescope helps with huge, distant objects. Both extend human observation beyond what eyes can do alone.

2

ANSWER WITH EVIDENCE

Use the passage

1

How does a microscope extend what a person can observe?

2

Name one small thing scientists can observe with a microscope, according to the passage.

3

Why can a telescope help people observe faint, distant objects?

4

Which tool would you choose to observe a galaxy? Explain why.

3

YOUR TURN

Your own words

Complete the table with one tiny object and one huge or distant object that are not named in the passage. For each object, choose a tool and explain what the tool would help you observe.

OBJECT TO OBSERVE	TOOL TO USE	WHAT THE TOOL HELPS YOU OBSERVE

PART 1 • READ AND MARK

Underline each tool named in the passage. Circle the words that tell what the tool helps people observe, so you can connect each tool to its use. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How does a microscope extend what a person can observe?	It uses several lenses to make tiny details easier to observe.
2	Name one small thing scientists can observe with a microscope, according to the passage.	Answers include pollen grains, parts of a plant cell, or a one-celled organism moving in pond water.
3	Why can a telescope help people observe faint, distant objects?	It collects more light than eyes can collect and brings the light to a focus.
4	Which tool would you choose to observe a galaxy? Explain why.	A telescope, because it helps people observe huge, distant objects such as galaxies.

PART 3 • YOUR TURN (SAMPLE ANSWER)

OBJECT TO OBSERVE	TOOL TO USE	WHAT THE TOOL HELPS YOU OBSERVE
Bacteria in yogurt	Microscope	It helps me see the tiny bacteria that my eyes cannot see alone.
The Moon	Telescope	It helps me see the Moon's distant surface details more clearly.

Accept other accurate examples if the student matches a microscope or similar magnifying tool to a tiny object, and a telescope to a huge or distant object. The explanation should state that the tool helps the student observe details beyond what eyes alone can see.