

Signals, Actions, Memories

Trace how sensory information supports behavior and memory.

MS-LS1-8 "Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each stimulus, circle the receptors that detect it, and write B beside an immediate behavior or M beside a memory, so you can trace what happens to sensory information.

From Senses to Decisions

- ① On a crowded sidewalk, Maya hears a bicycle bell behind her. Sound is a stimulus, a change in the environment that can be detected. Receptors in her ears respond to the sound and send information to her brain. Her brain uses that information right away. Maya steps closer to the curb, letting the cyclist pass. In this situation, the bell, the ear receptors, the brain, and Maya's quick movement form one chain of evidence about how sensing can guide immediate behavior.
- ② Not every message leads to an action that can be seen at once. At a community garden, Jordan notices the sharp, minty smell of crushed leaves. Receptors in the nose respond to odor molecules, and the brain receives information about the smell. Later, Jordan smells the same plant at home and remembers that its leaves were used for tea at the garden. The first experience helped create a memory that the brain can use later. A sensory message can therefore support learning as well as an immediate response.
- ③ Scientists can gather information from observations, diagrams, and investigations to build an explanation. A student may see bright lightning, hear thunder, or feel raindrops. Each stimulus is detected by receptors suited to that kind of change. The brain receives the sensory information and may direct an immediate behavior, such as moving indoors. It may also store details, such as the look of dark clouds, as memories. The same event can provide information for both a quick decision and future recognition.

2 ANSWER WITH EVIDENCE Use the passage

- 1 In paragraph 1, trace the evidence chain from the bicycle bell to Maya's action. Include the stimulus, receptor, brain, and behavior.

- 2 How does the garden example show that sensory information can be stored as a memory instead of causing an immediate behavior?

- 3 Compare the brain's use of sensory information in the sidewalk example and the garden example.

- 4 Which two details from paragraph 3 support the conclusion that one sensory event can lead to both a quick decision and future recognition?

3 YOUR TURN Your own words

Create a three-sentence explanation of a new everyday sensory event not described in the passage. Name the stimulus and receptor, explain an immediate behavior the brain could guide, and explain a memory that could be stored for later use.

PART 1 • READ AND MARK

Underline each stimulus, circle the receptors that detect it, and write B beside an immediate behavior or M beside a memory, so you can trace what happens to sensory information. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	In paragraph 1, trace the evidence chain from the bicycle bell to Maya's action. Include the stimulus, receptor, brain, and behavior.	The bicycle bell is the stimulus. Receptors in Maya's ears respond, her brain uses the information, and she steps closer to the curb.
2	How does the garden example show that sensory information can be stored as a memory instead of causing an immediate behavior?	Jordan first smells the crushed leaves at the garden. Later, smelling the same plant helps Jordan remember that the leaves were used for tea.
3	Compare the brain's use of sensory information in the sidewalk example and the garden example.	On the sidewalk, the brain uses information right away to guide Maya's movement. In the garden example, the brain stores information that Jordan can remember later.
4	Which two details from paragraph 3 support the conclusion that one sensory event can lead to both a quick decision and future recognition?	The brain may direct the student to move indoors right away, and it may store the look of dark clouds as a memory for later recognition.

PART 3 • YOUR TURN (SAMPLE ANSWER)

When I touch a hot mug handle, receptors in my skin respond to the heat. My brain uses the information right away, so I set the mug down carefully. It can also store a memory that the handle may be hot, helping me use a towel next time.

Accept accurate examples that clearly connect a stimulus to an appropriate sensory receptor and the brain. The response must include both an immediate behavior and a possible stored memory, without explaining how messages travel through the body.