Sunflower Survival System

Connect plant structures to the jobs they perform.

BOT.1.3 "Describe the relationship between the structure and purpose of plant organs (e.g., roots, stems, and leaves)."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline four plant structures in the passage. Circle the phrase that tells what each one does, then write the same number beside each matching pair.

A Sunflower on a Hot Day

1 At noon, a sunflower in the school garden faces bright light while its soil dries. Beneath the surface, a main root grows downward, and smaller roots branch into the soil. Near their tips, tiny root hairs add surface area where water and dissolved minerals enter the plant. The branching roots also grip the soil, keeping the tall plant anchored. A sunflower with few working root hairs may stay upright but take in less water. These underground structures do more than hold the plant in place: they supply materials needed by tissues above the ground.

2 The sunflower's stem stands between the roots and the leaves. Its long, firm shape holds the leaves where they can receive sunlight instead of leaving them shaded near the ground. Inside the stem, narrow xylem tubes carry water and dissolved minerals upward from the roots. Other tubes, called phloem, carry sugars made in the leaves to places that need energy or materials for growth. If the stem is crushed, these pathways can be damaged even when roots still absorb water. The stem acts as both a support and a route linking organs with different jobs.

3 Each leaf has a broad, thin blade that catches light and lets gases travel short distances inside the leaf. On its surface, tiny openings called stomata allow carbon dioxide to enter for photosynthesis. Pairs of guard cells change shape to open or close the stomata. Open stomata also let water vapor escape, so the plant can lose water on a hot afternoon. When water is scarce, closing many stomata reduces that loss but also limits carbon dioxide entry. The sunflower survives because its roots, stem, and leaves have structures that work together, even when conditions force a trade-off.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does the structure of root hairs help the sunflower take in water and minerals?

2. Why could crushed xylem in the stem harm the leaves even if the roots still absorb water?

3. How does the shape of a leaf blade help the sunflower use light and move gases?

4. How can guard cells help the sunflower conserve water, and what is the cost?

3 YOUR TURN

Your own words

Imagine a plant growing in shallow soil on a windy rooftop where rain runs off quickly. Propose a root feature and a stem feature that would help it survive, and explain how each feature helps. Write four sentences.

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PART 1 · READ AND MARK

Underline four plant structures in the passage. Circle the phrase that tells what each one does, then write the same number beside each matching pair. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does the structure of root hairs help the sunflower take in water and minerals?	**Root hairs add surface area where water and dissolved minerals enter the plant.**
2	Why could crushed xylem in the stem harm the leaves even if the roots still absorb water?	**Xylem tubes carry water and dissolved minerals upward from the roots. Crushed xylem can interrupt their delivery to the leaves.**
3	How does the shape of a leaf blade help the sunflower use light and move gases?	**Its broad shape catches light, and its thin shape lets gases travel short distances inside the leaf.**
4	How can guard cells help the sunflower conserve water, and what is the cost?	**Guard cells can close stomata, reducing water loss. Closing them also limits carbon dioxide entry for photosynthesis.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

This plant has shallow roots that spread widely through the soil. They can absorb rain before it runs off the roof. Its short, flexible stem bends when strong wind blows. Bending helps the stem avoid breaking.

For the marking task, accept any four accurate structure-purpose pairs from the passage. For Part 3, accept other plausible root and stem features when the response explains how each helps in the stated conditions.