Creek Connections

Trace water as it moves between a creek and the ground.

E.8.9A.7 "Explain the interconnected relationship between surface water and groundwater."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline the ways water enters Pine Creek, circle where creek water enters the ground, and write 1 and 2 beside the two water-level conditions that change the direction of flow.

Where Does Pine Creek's Water Go?

1. After a storm, Pine Creek swells and carries muddy water past a row of houses. Some rain runs across streets into the creek. Other rain soaks into soil and moves downward through tiny spaces in sediment and rock. Water filling connected spaces in saturated sediment and rock is called groundwater. Groundwater is not usually an underground river. It moves slowly through connected spaces. This movement means rain can reach the creek by two routes, across the land quickly or through the ground much later.

2. In spring, the groundwater level near Pine Creek is higher than the creek's water level. Groundwater then seeps through the creek bed and banks into the channel. This flow helps keep the creek running through weeks without rain, when street runoff has stopped. The creek and the groundwater are connected, not separate stores of water. A well beside the creek draws from the same underground supply. If many wells pump heavily, the groundwater level can drop, reducing the water that seeps into the creek.

3. During a long, hot drought, groundwater near a different stretch of Pine Creek may fall below the creek's water level. Water can then seep from the creek into the ground, adding to groundwater instead of being fed by it. Whether a stretch gains or loses water depends on the water levels on both sides of its bed. Rainfall, dry weather, and pumping can change those levels over time. A creek might even gain groundwater along one stretch while losing water along another on the same day.

2 ANSWER WITH EVIDENCE

Use the passage

1. After a storm, how can rain reach Pine Creek by two different routes, and which route is slower?

2. Why can Pine Creek keep flowing for weeks without rain in spring? Use the two water levels in your answer.

3. How could heavy pumping from wells beside the creek change the creek's flow?

4. During a long drought, when can creek water add to groundwater instead of receiving water from it?

3 YOUR TURN

Your own words

A school replaces pavement beside a creek with a rain garden where water can soak into the soil. In three sentences, explain how this change could affect the creek during a storm and during later dry days, and name one condition that could limit the effect.

ANSWER KEY

Creek Connections

GRADE 8 · E.8.9A.7

PART 1 · READ AND MARK

Underline the ways water enters Pine Creek, circle where creek water enters the ground, and write 1 and 2 beside the two water-level conditions that change the direction of flow. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	After a storm, how can rain reach Pine Creek by two different routes, and which route is slower?	**Rain can run across streets into the creek or soak into the ground and move toward it as groundwater. The groundwater route is slower.**
2	Why can Pine Creek keep flowing for weeks without rain in spring? Use the two water levels in your answer.	**The groundwater level is higher than the creek's water level, so groundwater seeps into the creek even after runoff stops.**
3	How could heavy pumping from wells beside the creek change the creek's flow?	**Pumping can lower the groundwater level, reducing the groundwater that seeps into the creek.**
4	During a long drought, when can creek water add to groundwater instead of receiving water from it?	**Creek water can seep into the ground when the groundwater level near that stretch falls below the creek's water level.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

The rain garden could reduce the amount of storm water running straight into the creek by letting more water soak into the ground. Later, that groundwater could seep into the creek if its level is higher than the creek's water level. If the soil is already saturated, less water can soak in, so the rain garden may have a smaller effect.

Accept explanations that connect water movement to differences in water level. For Part 3, students may name another reasonable limit, such as dry weather that provides little rain to soak in.