

Puddle Pattern Plans

Use repeated observations to explain change and plan a solution.

5.5.A · identify and use patterns to explain scientific phenomena or to design solutions;

Name _____ Date _____

Rainy Playground Clues (Illustrative Scenario)

Underline the observations that show a repeated pattern. Circle the words or sentences that explain how the class used the pattern to explain a change or plan a solution.

This is an invented classroom scenario for reasoning practice. After a morning rain, Ms. Chen's class noticed a pattern in puddles on the playground. Puddles in sunny places became smaller each hour. Puddles under the covered walkway stayed nearly the same size. The class numbered their observations from 9:00 to noon. They looked for changes that repeated instead of guessing from one puddle at a time.

Evaporation changes liquid water to water vapor. The class proposed that direct sunlight warmed the water and helped the sunny puddles evaporate faster. They had not measured water temperature or controlled starting depth, surface or airflow, so the pattern alone did not prove the cause. They could compare equal water amounts in matching containers in sun and shade and record temperatures and changes.

The class used the pattern to plan a water station for their garden. They placed a storage bucket beneath a roof downspout, where rainwater could collect. They chose a shaded spot for the bucket, rather than a sunny one. Based on the puddles, they predicted that less direct sunlight would slow evaporation and leave more water for plants.

1. Respond

What repeated pattern did the class observe in the sunny puddles?

2. Respond

Give the proposed explanation for faster shrinking. Name one other condition that must be checked before claiming the cause.

3. Respond

How did recording observations from 9:00 to noon make the class's conclusion stronger?

4. Respond

What garden design choice did the class make because of the puddle pattern, and what did they predict would happen?

Your turn

Choose a problem in which heat, light, water, or wind causes a change. Write three observations that could show a pattern, then propose one design solution and explain how the pattern supports your solution.

1.

The sunny puddles became smaller each hour.

2.

Sunlight may have warmed the water and sped evaporation. Check starting water depth/amount, surface or airflow, and measure temperature.

3.

It let the class see a repeated change over several hours instead of judging one puddle at one time. Repeated observations support a pattern but do not by themselves isolate its cause.

4.

They put the rainwater storage bucket in a shaded spot. They predicted that less direct sunlight would slow evaporation and leave more water for plants.

Sample response

I would compare identical towels with equal starting water in the same room. One would be near a fan, one farther away, and one outside its airflow. I predict the nearest towel would dry first, the middle towel next, and the towel outside the airflow last. If repeated tests showed this pattern, it would support the idea that moving air speeds drying. I would add a fan near the towel rack to help towels dry faster.

What to accept

Accept reasonable observations that compare conditions and identify a repeated pattern. The solution should match the stated pattern and include a logical explanation of how it addresses the problem. Distinguish the observed pattern in the scenario from the proposed cause. Do not require students to claim these are their own measurements.