

Pattern Detectives

Use repeated observations to explain changes and plan a test.

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

Name _____ Date _____

Following Sunlight Clues (Illustrative Scenario)

Underline each repeated observation or prediction, and number the two places where the class uses a pattern to explain something or choose a design.

This is an invented classroom scenario for reasoning practice. After a rainy day, Ms. Lee's class noticed puddles on the blacktop. At 9:00, a puddle in the sun was wide. By lunch, it was smaller. A puddle under a tree stayed about the same size. The class saw this pattern on three sunny days: water in sunny places disappeared faster than water in shade. This helped them ask why.

Water can change from liquid to water vapor, which mixes with air. This is evaporation. The class proposed that sunlight warmed the sunny puddle and helped it evaporate faster. The shrinking pattern alone does not prove that explanation: the puddles might also differ in starting depth, surface or airflow. A fair test would compare equal water amounts in matching containers while changing sun or shade.

Next, the class wanted paintbrushes to dry after art time. They put wet brushes on a tray near a sunny window instead of inside a dark cabinet. They predicted the brushes would dry faster in the warmer place. Their design used the puddle pattern. A test could show whether the prediction was correct or wrong.

1. Respond

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

2. Respond

What explanation did the class propose? Why does the puddle pattern alone not prove it?

3. Respond

What design did the class choose for the wet paintbrushes, and what pattern did they use to choose it?

4. Respond

What prediction would the paintbrush test check?

Your turn

Describe a sunlight-and-shade pattern you have observed or clearly label a hypothetical example. Write a possible explanation, then describe a fair test of that explanation. Keep an observation separate from what you think caused it.

1.

The puddle in the sun got smaller faster, while the puddle under the tree stayed about the same size.

2.

They proposed that sunlight warmed the water and sped evaporation. Starting depth, surface or airflow could also differ; a fair comparison is needed.

3.

They put the brushes near a sunny window. They used the pattern that water in sunny, warmer places disappeared or dried faster.

4.

It would check whether brushes near the sunny window dry faster than brushes in a dark cabinet.

Sample response

Hypothetical example: equal cups of snow may melt faster in sun than shade. Sunlight warming the snow is a possible explanation. I would compare equal snow amounts in matching cups at the same time in sun and shade, record temperatures and melting, and repeat the test. I would record actual results even if they differed from my prediction.

What to accept

Accept any accurate repeated pattern, a reasonable explanation connected to the pattern, and a test that changes one condition while keeping important features alike. Students may use a different sunlight or shade example than the sample. Distinguish the observed pattern in the scenario from the proposed cause. Do not require students to claim these are their own measurements.