

Puddle Drying Detectives

Trace causes and effects in an evaporation investigation.

4.5.B “identify and investigate cause-and-effect relationships to explain scientific phenomena or analyze problems;”

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each cause, circle the effect it produces, and number each cause-and-effect chain. This will help you see how the investigation explains why some puddles dry faster.

Why Did One Puddle Dry First?

- ① After a spring rain, puddles on the school playground disappeared at different times. Ms. Chen's class noticed that puddles in sunny spots dried before puddles under a covered picnic table. They wondered whether sunlight caused the difference. To investigate, they planned a fair test using equal amounts of water in identical shallow trays on the same pavement.
- ② They placed one tray in direct sunlight and one under the table. Both trays had the same size, water amount, and starting time. Every ten minutes, students measured the water left in each tray. The sunny tray lost water faster. Heat from sunlight gave water particles more energy, so more particles escaped into the air as water vapor.
- ③ By the end of an hour, the sunny tray held much less water. This result supported the idea that sunlight was a cause of faster evaporation. The class also identified a problem with comparing puddles outdoors: wind could change the drying rate. Next time, they could place both trays where wind is similar or measure it.

2

ANSWER WITH EVIDENCE

Use the passage

- 1 What effect did sunlight have on the water in the tray?
-
-
- 2 Why did the class use trays with the same size and amount of water?
-
-
- 3 What observation was evidence that sunlight caused faster evaporation?
-
-
- 4 Why could wind be a problem in this investigation, and how could the class reduce that problem?
-
-
-

3

YOUR TURN

Your own words

Plan a fair test to investigate whether the surface under an ice cube changes its melting rate. Complete both rows with two setups, what you will keep the same, what you will measure, and a prediction.

SETUP	SURFACE UNDER ICE CUBE	KEEP THE SAME	MEASURE	PREDICTION

PART 1 • READ AND MARK

Underline each cause, circle the effect it produces, and number each cause-and-effect chain. This will help you see how the investigation explains why some puddles dry faster. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What effect did sunlight have on the water in the tray?	Sunlight caused the water to evaporate, or disappear into the air as water vapor, faster.
2	Why did the class use trays with the same size and amount of water?	They kept these conditions the same so sunlight was the main difference between the two trays.
3	What observation was evidence that sunlight caused faster evaporation?	After one hour, the tray in sunlight held much less water than the tray under the table.
4	Why could wind be a problem in this investigation, and how could the class reduce that problem?	Wind could affect how quickly water dries, making it hard to know whether sunlight caused the difference. The class could place both trays where the wind is similar or measure the wind.

PART 3 • YOUR TURN (SAMPLE ANSWER)

SETUP	SURFACE UNDER ICE CUBE	KEEP THE SAME	MEASURE	PREDICTION
Setup 1	Metal tray	Same size ice cube, same room, same starting time	Time until the ice cube melts	The cube on metal will melt faster.
Setup 2	Wood board	Same size ice cube, same room, same starting time	Time until the ice cube melts	The cube on wood will melt more slowly.

Accept answers that identify sunlight as the cause and faster evaporation or less water as the effect. For Your Turn, accept any safe, testable comparison that changes one surface, keeps important conditions the same, measures melting, and gives a logical prediction.