

Pill Bug Detectives

Use evidence to plan, analyze, and defend an investigation.

SC.6.N.1.1 “Define a problem from the sixth grade curriculum, use appropriate reference materials to support scientific understanding, plan and carry out scientific investigation of various types, such as systematic observations or experiments...”

NAME _____ DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the testable problem and prediction, circle the changed and measured variables, and number details that make the observations fair or systematic.

A Moisture Choice Test

- ① A class found pill bugs under a damp flowerpot. They asked, “Does moisture affect where pill bugs spend time?” A field guide explained that pill bugs need moist places to avoid drying out. The class predicted that more pill bugs would choose a moist chamber side. Moisture was the changed variable. The pill bug count was the measured variable.
- ② They placed 10 pill bugs in the center of a chamber with one moist side and one dry side. They kept the chamber size, temperature, light, and observation time the same. Every five minutes for 20 minutes, they counted bugs on both sides. The table shows their counts. Recording the same kind of measurement at set times made the observations systematic.

PILL BUG COUNTS DURING THE TEST

Time (minutes)	Moist Side	Dry Side
0	5	5
5	7	3
10	8	2
15	8	2
20	9	1

- ③ At 20 minutes, nine bugs were on the moist side and one was on the dry side. The pattern supports the prediction because the moist-side count increased over time. The class concluded that, in this chamber, pill bugs preferred the moist side. They did not prove that moisture alone always causes this choice, because only one trial was run. More trials could test this prediction.

2 ANSWER WITH EVIDENCE Use the passage

1 What testable problem did the class investigate, and what reference material supported its understanding?

2 Identify the changed variable and the measured variable in this investigation.

3 Use the table to describe how the pill bug counts changed from 0 to 20 minutes.

4 What conclusion did the class make, and why was one trial not enough to prove it always happens?

3 YOUR TURN Your own words

Plan a fair investigation about a question you choose. Write 5 sentences that state your problem, prediction, changed variable, measured variable, controls, and how you will collect data and decide whether the evidence supports your prediction.

PART 1 • READ AND MARK

Underline the testable problem and prediction, circle the changed and measured variables, and number details that make the observations fair or systematic. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What testable problem did the class investigate, and what reference material supported its understanding?	They investigated whether moisture affects where pill bugs spend time. They used a field guide.
2	Identify the changed variable and the measured variable in this investigation.	The changed variable was moisture. The measured variable was the number of pill bugs on each side.
3	Use the table to describe how the pill bug counts changed from 0 to 20 minutes.	The moist-side count increased from 5 to 9, while the dry-side count decreased from 5 to 1.
4	What conclusion did the class make, and why was one trial not enough to prove it always happens?	The class concluded that pill bugs preferred the moist side in this chamber. One trial cannot show that moisture alone always causes the choice.

PART 3 • YOUR TURN (SAMPLE ANSWER)

My problem is, Does water temperature affect how fast a sugar cube dissolves? I predict the cube will dissolve fastest in warm water. I will change water temperature and measure dissolving time in seconds. I will keep the cup size, water amount, sugar-cube size, and stirring the same, and I will test each temperature three times. I will make a table of times and conclude that warmer water speeds dissolving only if its trials have shorter times than the other trials.

Accept equivalent wording when students correctly identify the problem, variables, trend, conclusion, and limitation. For the open response, accept any safe, testable plan with a measurable outcome, fair controls, a data-recording method, and an evidence-based decision rule.