

Shelter Data Detectives

Use test results to judge a design and plan a better test.

LS.1.c.v "interpreting, analyzing, and evaluating data use data to evaluate and refine design solutions"

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the last two sentences of paragraph 2, circle 9.1 and 3.0 in the table, write 1 beside the sentence that evaluates the best design, and write 2 beside the sentence that proposes the next test.

Testing Pill Bug Shelters

- ① To give pill bugs a resting place, a team tested four cardboard shelter designs in separate trays. Design A was a flat cover. Design B was a tunnel. Design C was a tunnel with three small side holes. Design D was a tunnel with eight side holes. The team predicted that a sheltered, ventilated space might attract more pill bugs.
- ② Each tray held ten pill bugs for ten minutes. The team ran three trials per design and calculated the mean number found under each shelter. Shelter size, tray moisture, light, temperature, and pill bug number were the same in every trial. Each tray received the same food type and amount, placed five centimeters from the shelter entrance.

MEAN PILL BUGS FOUND UNDER EACH SHELTER

Design	Shelter Feature	Mean Pill Bugs Under Shelter
A	Flat cover	3.0
B	Tunnel	7.7
C	Tunnel with 3 side holes	9.1
D	Tunnel with 8 side holes	5.2

- ③ Design C had the highest mean, 9.1 pill bugs, so the evidence supports its combination of a tunnel and three holes. Because Design D had a lower mean than Design C, adding more holes did not improve the shelter. The team should refine C by testing two, three, and four holes while keeping all other conditions the same.

2

ANSWER WITH EVIDENCE

Use the passage

1

Which design had the strongest result? Use a number from the table as evidence.

2

Name two conditions the team controlled to make the shelter comparison fair. Include one detail about food.

3

What does the comparison between Designs C and D show about adding more side holes? Use both mean values.

4

What next test does the passage recommend, and what must stay the same during that test?

3

YOUR TURN

Your own words

Plan a fair next-round shelter test. In the table, list three tunnel versions that change only the number of side holes, name conditions that will stay the same, and tell what data you will record.

TUNNEL VERSION	CHANGE: NUMBER OF HOLES	CONDITIONS KEPT THE SAME	DATA TO RECORD

PART 1 • READ AND MARK

Underline the last two sentences of paragraph 2, circle 9.1 and 3.0 in the table, write 1 beside the sentence that evaluates the best design, and write 2 beside the sentence that proposes the next test. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Which design had the strongest result? Use a number from the table as evidence.	Design C had the strongest result. Its mean was 9.1 pill bugs under the shelter.
2	Name two conditions the team controlled to make the shelter comparison fair. Include one detail about food.	Answers may name any two controls: shelter size, tray moisture, light, temperature, pill bug number, test time, or the same food type and amount placed five centimeters from the entrance.
3	What does the comparison between Designs C and D show about adding more side holes? Use both mean values.	Adding more holes did not improve the shelter. Design C with three holes had a mean of 9.1, while Design D with eight holes had a mean of 5.2.
4	What next test does the passage recommend, and what must stay the same during that test?	Test tunnels with two, three, and four holes. Keep all other conditions the same.

PART 3 • YOUR TURN (SAMPLE ANSWER)

TUNNEL VERSION	CHANGE: NUMBER OF HOLES	CONDITIONS KEPT THE SAME	DATA TO RECORD
Tunnel 1	2 holes	Shelter size, moisture, light, temperature, ten pill bugs, food type, food amount, and food placement	Mean number of pill bugs under the shelter after ten minutes
Tunnel 2	3 holes	Shelter size, moisture, light, temperature, ten pill bugs, food type, food amount, and food placement	Mean number of pill bugs under the shelter after ten minutes
Tunnel 3	4 holes	Shelter size, moisture, light, temperature, ten pill bugs, food type, food amount, and food placement	Mean number of pill bugs under the shelter after ten minutes

Accept controlled conditions stated in equivalent accurate words. For the open task, accept any three tunnel versions that vary only hole number and identify suitable controlled conditions and a measurable pill bug count.