

# Pill Bug Evidence

Read data and evaluate a scientific argument.

**LS.1.f.iii** "obtaining, evaluating, and communicating information construct, use, and/or present an argument supported by empirical evidence and scientific reasoning"

NAME \_\_\_\_\_

DATE \_\_\_\_\_

## 1 READ AND MARK \_\_\_\_\_ Read it twice

**YOUR JOB** Underline the claim, circle the empirical evidence in the text and table, and write 1 beside the sentence that explains why the evidence supports the claim.

### Do Pill Bugs Prefer Dampness?

- ① Pill bugs are terrestrial crustaceans that breathe with gill-like structures and lose water easily in dry air. A science class tested whether pill bugs gather more often on a damp surface than on a dry surface. In each trial, students placed 10 pill bugs in the center of a two-sided choice chamber and waited 10 minutes.

**PILL BUG LOCATIONS AFTER 10 MINUTES**

| Trial | Damp Side | Dry Side |
|-------|-----------|----------|
| 1     | 8         | 2        |
| 2     | 7         | 3        |
| 3     | 9         | 1        |
| 4     | 8         | 2        |

- ② Students used a fresh group of 10 pill bugs for each of four trials. They kept the chamber size, light, temperature, number of animals, and waiting time the same. The only planned difference was the moisture of the surface. These controls help make moisture, rather than another condition, a reasonable explanation for any difference in locations.
- ③ Across the four trials, 32 of 40 pill bugs were on the damp side after 10 minutes, while 8 were on the dry side. This empirical evidence supports the claim that pill bugs tend to gather on damp surfaces. It does not prove that every pill bug always chooses dampness, because behavior can vary and this class tested one setup.

**2 ANSWER WITH EVIDENCE** \_\_\_\_\_ Use the passage

**1** What claim does the evidence support?

\_\_\_\_\_

**2** What numerical evidence from all four trials supports the claim?

\_\_\_\_\_

**3** Name two conditions the students kept the same. How do these controls strengthen the argument?

\_\_\_\_\_

**4** Why do the results not prove that every pill bug will always choose a damp surface?

\_\_\_\_\_

**3 YOUR TURN** \_\_\_\_\_ Your own words

Two identical bottles held the same amounts of yeast, sugar water, and air. After 30 minutes, a balloon on the 30 °C bottle measured 18 cm around, while a balloon on the 10 °C bottle measured 3 cm around. Write exactly four sentences that state a claim, cite both measurements, explain how the controls support the reasoning, and name one limit of the evidence.

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**PART 1 • READ AND MARK**

Underline the claim, circle the empirical evidence in the text and table, and write 1 beside the sentence that explains why the evidence supports the claim. Accept any marking that follows this job and points at the right text.

**PART 2 • ANSWERS**

| # | QUESTION                                                                                       | ANSWER                                                                                                                                                                                               |
|---|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | What claim does the evidence support?                                                          | <b>Pill bugs tend to gather on damp surfaces.</b>                                                                                                                                                    |
| 2 | What numerical evidence from all four trials supports the claim?                               | <b>After 10 minutes, 32 of 40 pill bugs were on the damp side, and 8 of 40 were on the dry side.</b>                                                                                                 |
| 3 | Name two conditions the students kept the same. How do these controls strengthen the argument? | <b>Answers may name chamber size, light, temperature, number of animals, or waiting time. Keeping these conditions the same makes moisture a reasonable explanation for the location difference.</b> |
| 4 | Why do the results not prove that every pill bug will always choose a damp surface?            | <b>Behavior can vary, and the class tested only one setup.</b>                                                                                                                                       |

**PART 3 • YOUR TURN (SAMPLE ANSWER)**

Under these conditions, yeast produced more carbon dioxide at 30 °C than at 10 °C. After 30 minutes, the balloon at 30 °C measured 18 cm around, compared with 3 cm at 10 °C. Because the bottles began with the same amounts of yeast, sugar water, and air, temperature is a reasonable explanation for the difference. This one trial does not show whether the same result would occur with other temperatures or repeated groups.

Accept equivalent claims that accurately describe a tendency toward damp surfaces, not an absolute preference. For the open response, accept scientifically reasonable wording when it includes a claim, both measurements, control-based reasoning, and a valid limitation.