

Fair Test Detectives

Trace the choices that make an investigation fair, safe, and useful.

LS.1.b.i "planning and carrying out investigations independently and collaboratively plan and conduct observational and experimental investigations; identify variables, constants..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the team's observation and question. Circle the changed factor and measured result, then number the control, constants, safety steps, and reliability steps you find.

Where Do Pill Bugs Gather?

- ① To investigate whether moisture affects where pill bugs gather, Maya's team first made an observation. During a garden walk, they noticed pill bugs under damp stones more often than on dry paths. They asked, "Do pill bugs choose a moist chamber over a dry chamber?" Their plan used a choice chamber with two equal sections. One section held damp paper towel, and the other held dry paper towel. This was an experimental investigation because the team would change one condition and measure a response.
- ② Moisture was the independent variable, the condition deliberately changed. The dependent variable was the number of pill bugs in each section at the end of five minutes. The dry section was the control, or comparison condition. The team kept several constants the same: ten pill bugs, equal chamber size, equal paper-towel size, room temperature, light level, and timing. They placed all ten pill bugs in the center, started a timer, and counted the bugs in each section once every minute without touching them.
- ③ To protect the organisms and collect fair data, the team used a soft paintbrush rather than fingers to move the pill bugs. They washed hands after handling the chamber, kept food away from the work area, and returned the pill bugs where they were found. No chemicals were needed, so the team did not add cleaners, sprays, or other substances. One student timed, one recorded counts, and one checked that conditions stayed the same. After five minutes, they repeated the trial twice with the chamber sides switched.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What observation led Maya's team to plan this investigation, and what question did they investigate?

2 Identify the independent variable and the dependent variable in this investigation.

3 What was the control? Name two constants the team kept the same.

4 Describe one safety step and one step that made the results more reliable.

3 YOUR TURN _____ Your own words

Write exactly 7 sentences that plan an experimental investigation about seeds, plants, or another living thing. Include an observation, a test question, the changed factor, the measured result, a control, at least two constants, a safety step, and how partners will collect reliable data.

PART 1 • READ AND MARK

Underline the team's observation and question. Circle the changed factor and measured result, then number the control, constants, safety steps, and reliability steps you find. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What observation led Maya's team to plan this investigation, and what question did they investigate?	They noticed pill bugs under damp stones more often than on dry paths. They investigated whether pill bugs choose a moist chamber over a dry chamber.
2	Identify the independent variable and the dependent variable in this investigation.	The independent variable was moisture, wet versus dry paper towel. The dependent variable was the number of pill bugs in each section after five minutes.
3	What was the control? Name two constants the team kept the same.	The dry section was the control. Constants included the number of pill bugs, chamber size, paper-towel size, room temperature, light level, and timing.
4	Describe one safety step and one step that made the results more reliable.	Safety steps included using a soft paintbrush, washing hands, keeping food away, and returning the pill bugs. Reliability steps included repeating the trial twice and switching the chamber sides.

PART 3 • YOUR TURN (SAMPLE ANSWER)

I observed that radish seeds near a sidewalk sometimes grow poorly. I will test whether saltwater concentration affects radish seed germination. The independent variable will be salt concentration, and the dependent variable will be the number of seeds that germinate after seven days. Cups given plain water will be the control. I will keep seed type, five seeds per cup, soil amount, cup size, light, temperature, and water volume the same. I will wear goggles, label the salt solutions, avoid tasting them, and wash my hands after the investigation. My partner will water the cups while I record daily germination counts, and we will repeat the test with three cups at each concentration.

Accept equivalent, testable investigation plans that identify a single changed factor and a measurable result. The control should provide a comparison, constants should be reasonable, and safety and reliability procedures should fit the chosen investigation.