

Seeds, Trials, Evidence

Use repeated trials and replication to build stronger scientific evidence.

SC.8.N.1.2 "Design and conduct a study using repeated trials and replication."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the independent and dependent variables, circle two controlled variables, and number the sentences that describe repeated trials or replication. These details show how Jordan and Maya made their study more reliable.

Testing Water Temperature

- ① Jordan wanted to test whether water temperature changes how quickly radish seeds sprout. She chose identical seeds from one packet and used the same kind of cup, soil amount, light, and water volume for every group. Her independent variable was water temperature: cool, room-temperature, or warm. Her dependent variable was the number of seeds that sprouted after five days. Before starting, Jordan wrote a procedure so another student could follow the same steps and compare results fairly.
- ② Jordan placed 10 seeds in each cup. For each temperature, she set up three cups, giving three repeated trials under the same condition. She labeled the cups only with codes, then checked them at the same time each day. A trial was not just one seed, because a single seed might be damaged or unusually slow. By counting sprouts in all three cups and calculating the average for each temperature, Jordan could see a pattern that was less affected by chance.
- ③ After Jordan finished, Maya used Jordan's written procedure on a different week with new seeds from the same seed company. This replication tested whether the pattern appeared again, rather than depending on one set of cups or one week of weather. Maya kept the controlled variables the same and used three cups at each temperature. If both investigations showed similar average sprouting results, the claim would be stronger. If their results differed, the students would check procedures, seed condition, and possible uncontrolled variables before making a conclusion.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What was Jordan's independent variable, and what was her dependent variable?

2 How did Jordan use repeated trials for each water temperature? Why did this make her results less affected by chance?

3 What did Maya do to replicate Jordan's study?

4 What would similar results from Jordan and Maya show? What should they do if their results differ?

3 YOUR TURN _____ Your own words

Design a study that tests one factor that could affect plant growth. In one paragraph, state your question, independent variable, dependent variable, at least two controlled variables, the number of repeated trials, and how another person could replicate the study.

PART 1 • READ AND MARK

Underline the independent and dependent variables, circle two controlled variables, and number the sentences that describe repeated trials or replication. These details show how Jordan and Maya made their study more reliable. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What was Jordan's independent variable, and what was her dependent variable?	Independent variable: water temperature. Dependent variable: the number of seeds that sprouted after five days.
2	How did Jordan use repeated trials for each water temperature? Why did this make her results less affected by chance?	She used three cups for each temperature, with 10 seeds in each cup. Multiple trials reduced the effect of an unusual or damaged seed and allowed her to compare averages.
3	What did Maya do to replicate Jordan's study?	Maya followed Jordan's written procedure during a different week, using new seeds from the same seed company and three cups at each temperature.
4	What would similar results from Jordan and Maya show? What should they do if their results differ?	Similar results would make their claim stronger. If results differed, they should check their procedures, seed condition, and possible uncontrolled variables.

PART 3 • YOUR TURN (SAMPLE ANSWER)

I will test whether the amount of light changes basil seedling height. I will grow plants with 4, 8, or 12 hours of light each day and measure height in centimeters after 14 days. I will use the same seed type, pot size, soil, water amount, and room temperature. I will set up four pots at each light level as repeated trials. A partner will repeat my procedure the next week with new seeds to replicate the study.

Accept equivalent wording for variables, controls, repeated trials, and replication when it matches the passage. For the open task, accept any testable plant-growth study that identifies all requested design elements and uses repeated trials plus a separate replication.