SCIENCE GRADE 5 LESSON 1

HSEA HomeSchool Education Academy

Scientific Method & Fair Tests

How to use: Print first for the main practice. Then use the device to repeat activities and save progress.

LEARNING OBJECTIVES

1. Name the steps of the scientific method in order
2. Explain what makes an experiment a fair test
3. Identify independent, dependent, and controlled variables
4. Use evidence to draw a clear conclusion

MINI LESSON

Scientists use the scientific method to answer questions about the world. It is a step-by-step process that turns curiosity into evidence. Each step builds on the one before it, and a good scientist can repeat the process to refine an idea.

The Five Steps

1. Question — ask a clear, testable question about something you observe.
2. Hypothesis — predict what you think will happen and why.
3. Experiment — test the hypothesis with a fair, careful procedure.
4. Data — record measurements and observations as you go.
5. Conclusion — explain what the data shows, using evidence.

What Makes a Fair Test

A fair test changes only one thing at a time. That way, you know which change caused the result. Scientists call the things they change, measure, and keep the same the variables of the experiment.

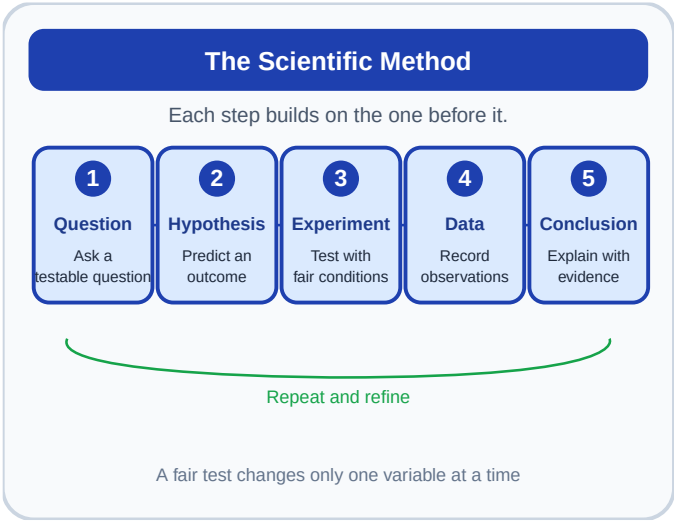
- Independent variable — the one thing you change on purpose.
- Dependent variable — what you measure to see the effect.
- Controlled variables — everything else you keep the same.

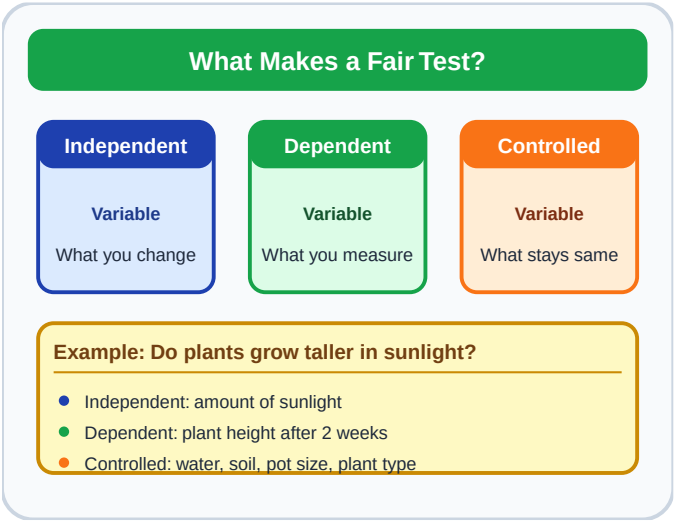
Example: Do Plants Grow Taller in Sunlight?

- Independent: amount of sunlight (full sun vs. shade).
- Dependent: plant height after two weeks.
- Controlled: same plant species, same soil, same water, same pot size.
- Conclusion is only fair if every other condition stayed the same.

! Tip: if more than one thing changes between trials, you cannot tell which change caused the result. Change one variable, keep the rest the same.

VOCABULARY	
hypothesis	A prediction about what will happen, based on what you already know.
fair test	An experiment that changes only one variable at a time.
independent variable	The one thing the scientist changes on purpose.
dependent variable	What the scientist measures to see the effect.
controlled variable	Everything else that is kept the same so the test is fair.





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GUIDED PRACTICE — WRITE YOUR RESPONSE

Read the prompt and use at least 5 of the vocabulary words below. Write at least 30 words.

Prompt

Write 2-3 sentences explaining what you have learned. Use at least 5 of the vocabulary words below.

VOCABULARY — USE AT LEAST 5

hypothesis · experiment · conclusion · independent · dependent · controlled · fair test · evidence · data

Write at least 30 words.

EXERCISES — SORT & MATCH

Sort each example into the correct step of the scientific method.

SENTENCES TO SORT

1. "Why do leaves change color in autumn?"
2. "Does soil type affect how fast a seed sprouts?"
3. I think seeds in dark soil will sprout fastest.
4. I predict the warmer cup of water will dissolve sugar quicker.
5. Place 3 seeds in each cup and water them daily.
6. Time how long an ice cube takes to melt in 3 rooms.
7. Day 3: cup A = 2 cm, cup B = 1 cm, cup C = 0 cm.
8. Recorded melt times in seconds: 240, 312, 450.
9. The seeds in dark soil grew tallest, supporting my hypothesis.
10. Warmer water dissolved the sugar faster, as predicted.

Write the number of each sentence in the correct bucket below.

1. Question	2. Hypothesis	3. Experiment	4. Data	5. Conclusion

"Flip the page upside down to see the answer key "

1. Question: "Why do leaves change color in autumn?", "Does soil type affect how fast a seed sprouts?" | 2. Hypothesis: I think seeds in dark soil will sprout fastest., I predict the warmer cup of water will dissolve sugar quicker. | 3. Experiment: Place 3 seeds in each cup and water them daily., Time how long an ice cube takes to melt in 3 rooms. | 4. Data: Day 3: cup A = 2 cm, cup B = 1 cm, cup C = 0 cm., Recorded melt times in seconds: 240, 312, 450. | 5. Conclusion: The seeds in dark soil grew tallest, supporting my hypothesis., Warmer water dissolved the sugar faster, as predicted.

EXERCISES — MATCH THE PAIRS

Match each science term to its correct meaning.

1. Hypothesis
2. Independent variable
3. Dependent variable
4. Controlled variable

A. What you keep the same

B. Changes only one variable at a time

C. Explanation supported by data

D. A prediction with a reason

E. The one thing you change

F. What you measure

Write the matching letter next to each number (e.g. 1-B, 2-A, 3-C...).

1 — ____ 2 — ____ 3 — ____ 4 — ____ 5 — ____ 6 — ____

"Flip the page upside down to see the answer key "

1-D 2-E 3-F 4-A 5-B 6-C

PRACTICE — DICTATION / TYPING

Without looking, list the 5 steps of the scientific method and explain what a fair test is.

What are the 5 steps of the scientific method, and what makes an experiment a fair test?
Think: ask, predict, test, record, explain. Then think about what stays the same and what changes.

"Flip the page upside down to see the answer key "

question / hypothesis / experiment / data / conclusion / fair / variable

EXERCISES — MULTIPLE CHOICE

Circle the best answer.

1. Which step of the scientific method comes FIRST?

- ◯ Hypothesis
- ◯ Question
- ◯ Conclusion

2. A hypothesis is best described as...

- ◯ A guess with no reason behind it
- ◯ A prediction based on what you already know
- ◯ The result of the experiment

3. You change the amount of sunlight a plant gets to see how it grows. Sunlight is the...

- ◯ Dependent variable
- ◯ Controlled variable
- ◯ Independent variable

4. In the same plant experiment, the plant's height after 2 weeks is the...

- ◯ Independent variable
- ◯ Dependent variable
- ◯ Hypothesis

5. Which of these would NOT be a fair test?

- ◯ Using the same soil and water for every plant
- ◯ Changing the sunlight AND the type of pot at the same time
- ◯ Giving every plant the same amount of water

6. After running an experiment, what should you do with your data?

- ◯ Throw it away if it does not match your hypothesis
- ◯ Use it to draw a conclusion based on evidence
- ◯ Change the numbers so the hypothesis is correct

7. A controlled variable is...

- ◯ Anything that is kept the same in every trial
- ◯ The thing you change
- ◯ The result of the test

8. Which question is the MOST testable in a science experiment?

- ◯ Which fruit is the best?
- ◯ Which paper towel absorbs the most water?
- ◯ Is it fun to do science?

"Flip the page upside down to see the answer key "

1.b 2.b 3.c 4.b 5.b 6.b 7.a 8.b

ASSESSMENT

PARENT / TEACHER CHECKLIST

- ☐ Can list the 5 steps of the scientific method in order
- ☐ Can write a testable question and a matching hypothesis
- ☐ Can identify the independent, dependent, and controlled variables in a scenario
- ☐ Can explain why a fair test changes only one variable at a time
- ☐ Can draw a conclusion that is supported by data