

GRADE 4 LEARNING PACK

The Missing Variable

Read a scientific narrative and explain fair testing, variables and transparent revision.

LEARN • PRACTISE • CREATE • REFLECT

Original BrightPencil Kids resource - adult-led where appropriate

A4 edition • 12 purposeful pages • review copy

Print. Learn. Grow.

Grown-up guide

Learning objective

Read a scientific narrative and explain fair testing, variables and transparent revision.

Use this pack well

- Model the first example aloud, then let the learner try.
- Ask “How do you know?” more often than “Are you finished?”.
- Use real objects, talk, movement or observation when the activity suggests it.
- Stop or shorten the session if attention or enjoyment drops.
- Open-ended pages can have many successful answers.

Quality note

This resource was written originally for BrightPencil Kids. Curriculum sources informed scope and progression only; no third-party worksheet or story text is reproduced.

Read the story

PART 1

Leo wanted to compare which paper towel absorbed the most water. He cut three towel samples, poured water onto each and measured what remained.

PART 2

His first table looked convincing until Priya asked how large the samples were. Leo had used a small square from one roll, a large rectangle from another and a folded piece from the third.

PART 3

They realised that brand was not the only thing changing. Sample area and number of layers were changing too.

PART 4

Leo repeated the test with equal-sized, single-layer pieces and the same amount of water. The second results were different from the first.

PART 5

He kept both tables in his report. The first showed why controlling variables matters; the second provided a fairer comparison.

Read section 1: Leo wanted to compare which paper towel absorbed the most water. He cut three towel samples, poured water onto each and measured what remained.

Read section 2: His first table looked convincing until Priya asked how large the samples were. Leo had used a small square from one roll, a large rectangle from another and a folded piece from the third.

Read section 3: They realised that brand was not the only thing changing. Sample area and number of layers were changing too.

Read section 4: Leo repeated the test with equal-sized, single-layer pieces and the same amount of water. The second results were different from the first.

Read section 5: He kept both tables in his report. The first showed why controlling variables matters; the second provided a fairer comparison.

Try it beyond the page

Real-world / hands-on connection

Retell the story to a trusted adult in under one minute, then name the moment that changed the direction of the story.

Before you finish

What did you notice?

What evidence, object or example helped you?

What would you change if you tried again?

Create something

Your project

Create a six-frame evidence storyboard showing setup, problem, evidence, turning point, decision and learning idea.

Use this space for planning, drawing, mapping, designing or notes.

CHALLENGE

Think deeper

1. What made the first test unfair?

2. Why did Leo keep the first table?

3. What changed in the second test?

Quick review

1. In one sentence, explain the big idea of “The Missing Variable”.

2. Draw or write one example that shows you understand.

3. Choose one activity from this pack and explain the strategy you used.

4. Write one question you still have.

Answer & discussion notes

Use these as guidance, not scripts. Open questions can have different successful responses when the reasoning is sensible and evidence-based.

1. Suggested response

Use details stated or strongly supported by the story.

2. Suggested response

Equivalent evidence-based wording is acceptable.

3. Suggested response

Open responses should explain reasoning using story evidence.

Review before publication

Check age fit, factual accuracy, clarity, accessibility, rights provenance and whether the activity works in practice. This file remains a review copy until those checks are signed off.

FINISH

My learning reflection

I finished this BrightPencil learning pack.

One thing I understand better now:

A strategy that helped me:

Something I created or noticed:

My next small question or goal:

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