

GRADE 4 LEARNING PACK

The Loop That Never Ended

Use a narrative to reason about loops, variables, conditions and systematic debugging.

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

Use a narrative to reason about loops, variables, conditions and systematic debugging.

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

Sofia programmed a robot character to move forward while a counter was greater than zero. She set the counter to five but forgot to change it inside the loop.

PART 2

The robot marched across the screen and kept going. Sofia first pressed reset and ran the same program again. The same thing happened.

PART 3

She traced the code one instruction at a time. The condition stayed true because the counter remained five forever.

PART 4

Sofia added "counter = counter - 1" inside the loop and tested again. The robot moved exactly five steps and stopped.

PART 5

Her debugging note said, "Do not only rerun a bug. Trace what changes, what stays the same and why the condition will eventually become false."

Read section 1: Sofia programmed a robot character to move forward while a counter was greater than zero. She set the counter to five but forgot to change it inside the loop.

Read section 2: The robot marched across the screen and kept going. Sofia first pressed reset and ran the same program again. The same thing happened.

Read section 3: She traced the code one instruction at a time. The condition stayed true because the counter remained five forever.

Read section 4: Sofia added “counter = counter - 1” inside the loop and tested again. The robot moved exactly five steps and stopped.

Read section 5: Her debugging note said, “Do not only rerun a bug. Trace what changes, what stays the same and why the condition will eventually become false.”

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. Why did the loop never stop?

2. What change fixed it?

3. What debugging habit did Sofia learn?

Quick review

1. In one sentence, explain the big idea of “The Loop That Never Ended”.

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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