DMT COMPANION

Insight 19 · 2025 · for teachers, coaches, principals, and families

THE FIVE COUNTING PRINCIPLES: FROM COUNTING WORDS TO QUANTITY

How to Use This

This Companion is for anyone working with DMT Insight 19. Start with the three questions that follow. Answer them before you read the Insight or watch the video, then come back and answer them again. Coaches can open a team meeting with the same three questions, and use the worked examples to keep the conversation close to the classroom.

> **Key Idea • Counting is more than saying number words in order. Students give one number word to each unit, keep the sequence, and know that the final number names the quantity.**

Three Guiding Questions

Answer these before you read the Insight or watch the video, then again afterward.

1. **When your students finish counting a set, and you ask "How many?", what do they do?**
2. **Which students say the sequence correctly but lose track of the objects they have counted?**
3. **Do your students expect the same quantity when a set is counted in a different order or spread apart?**

What to Listen and Look For

Listen to the number words, but also watch what the student coordinates: the unit, the number word, and the quantity.

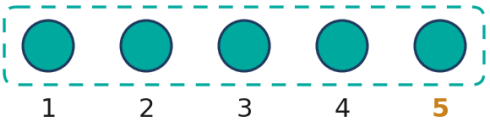
LISTEN · the number words

"1, 2, 3, 4, 5"

The words are in order.

Did each word go with one counter?
Does 5 name the quantity?

LOOK · what the student coordinates



"How many?" "Five."

One number word for each counter, in a stable order.
The final word names the quantity.

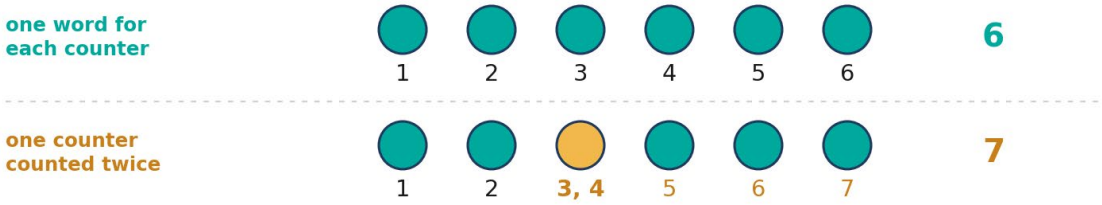
Listen: the number words are in order. Look: each counter receives one number word, and the final word names the quantity.

Saying the sequence matters. Students need the number words in a stable order. Counting a set asks for more: one number word for each unit, plus a final number word that names the set's quantity.

> **Key Idea • Reciting the counting sequence and counting a quantity are different. Students need both.**

The Five Principles in the Classroom

Example 1 · one-to-one correspondence: one number word for each unit



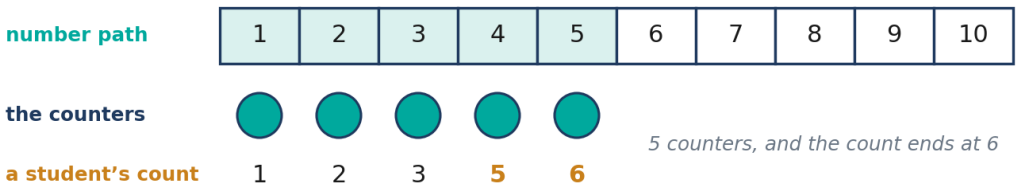
In the second count, one counter receives two number words, so six counters are counted as 7.

The language to use:

"What are you counting?"

"How will you make sure you count each one once?"

Example 2 · stable order: the number words in a consistent sequence



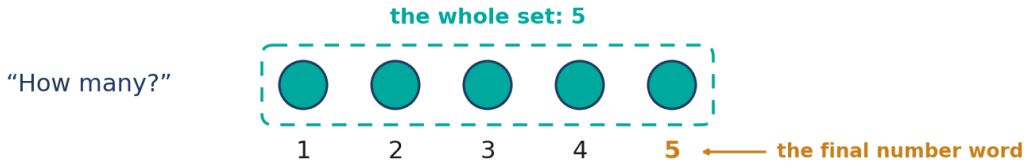
The student touches each counter once but skips a number word. The student can use the number path to check the sequence.

The language to use:

"What number comes after 3? What number comes before 5?"

"Use the number path to check the sequence."

Example 3 · cardinality: the final number tells how many



The final number word names the whole set, not only the last counter.

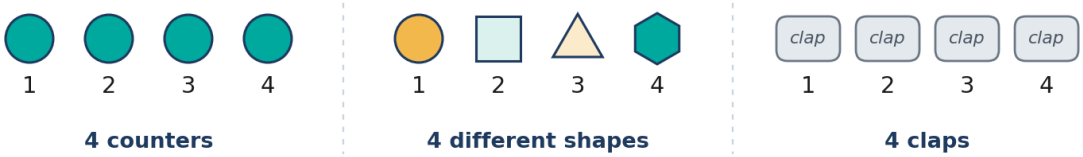
A student who counts again when asked "How many?" may not yet be using the final number as the quantity of the whole set.

The language to use:

"How many are there in total? How do you know?"

"What would happen if I added one more?"

Example 4 · abstraction: different things can be counted as units



Each object or event is one unit.

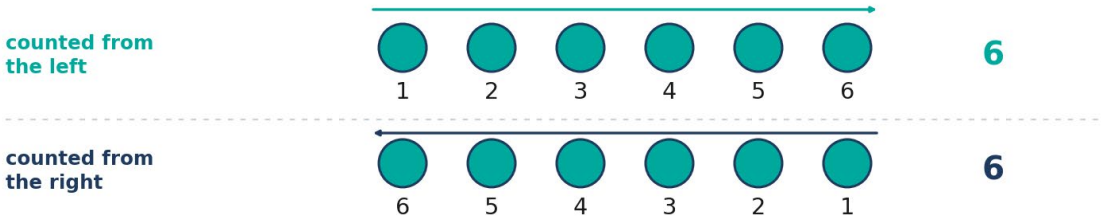
Counters, different shapes, and claps can all be counted. The student identifies what counts as one.

The language to use:

"What are we counting this time?"

"Close your eyes and count the claps. How many did you hear?"

Example 5 · order irrelevance: a different order, the same quantity



Each counter is counted exactly once in both counts, so the quantity is 6 both times.

The language to use:

"If we start counting over here instead, will there still be the same number? Why?"

"If I move these farther apart, did the quantity change?"

The Language Shift

Keep this by the board. The left column asks for a count. The right column asks what the count shows.

Instead of	Ask
“Count these for me.”	“What are you counting? How will you count each one once?”
“Good, you counted to five.”	“How many are there in total? How do you know?”
“No, count them again.”	“Show me which ones you have counted so far.”
“Always start on the left.”	“If we start over here, will there still be the same number?”
“Now there are more.”	“I moved these farther apart. Did the quantity change?”
“What comes next?”	“What number comes before? What number comes after?”

What to look for in a classroom:

- Students touching or moving each object as they say one number word.
- “How many?” asked after the count, and students answering without counting again.
- The same set counted in more than one order and more than one arrangement.
- Sounds, actions, and mixed sets counted, not only identical counters.

> **Key Idea • Not every difficulty is a misconception. Some show knowledge that is still developing.**

Across the Grades

The structural idea of counting continues across mathematics, while the unit being counted changes.

Grade band	Example	Model	The shift it asks for
Grades K-2	Counting sets of ones, counting on, and counting backward	Collections, ten-frame, number path	From saying the number words to counting a quantity
Grades 3-5	Counting units of ten, equal units, and unit fractions	Bar model, number line, area model	From counting ones to counting units of different sizes
Grades 6-8	Counting units of measure and the units in a ratio	Number line, ratio table	From counting objects to identifying what counts as one

> **Key Idea • The question “What counts as one?” returns with place value, fractions, measurement, and ratio.**

Where to Go Next

Read DMT Insight 19 and watch the short video. Find both at mathsuccess.io/dmtinsights.

Try this every day for a week. Give one student a small set to count. Then ask, “How many?” and “If you start from the other end, how many will there be?” Note whether the student answers or counts again.