

DMT COMPANION

Insight 28 · 2026 · for teachers, coaches, and school leaders



RETEACHING THAT WORKS: RESPONDING TO STUDENT THINKING

Using student reasoning to decide what to reteach and how

How to Use This

This Companion provides examples and questions to help teachers, instructional coaches, and school leaders examine student reasoning and decide what to reteach. Start with the three questions that follow.

Key Idea • Reteaching begins with evidence of how students are reasoning. The instruction that follows should address the mathematical relationship involved.

Three Guiding Questions

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

1. When students miss a problem, what evidence do you collect about their reasoning before you reteach?
2. How do you determine which representation or question will help students examine the mathematical relationship they do not yet understand?
3. How do you decide whether students need more practice or a closer look at the mathematics?

Four Decisions Before You Reteach

Each decision draws on evidence from student work. Together they determine what the reteaching will address.

Decision	Questions to ask
1. Examine student reasoning	"How did you get your answer? Can you show me with a model or a drawing?"
2. Identify the mathematics	Which quantity, unit, or relationship does the student not yet understand?
3. Select a representation	Which model, diagram, number line, or equation makes that relationship visible?
4. Connect understanding and practice	Can the student explain why the procedure works? Does the student need more practice to become accurate and efficient?

Worked Examples

Example 1 · adding fractions: $\frac{1}{3} + \frac{1}{4}$

The same unit of 1: thirds and fourths



one-third



one-fourth

A response of $\frac{1}{3} + \frac{1}{4} = \frac{2}{7}$

may add the numerators and the denominators as if they were whole numbers.

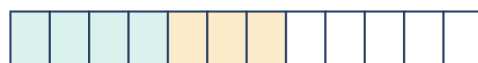
Same-sized units: twelfths



$$\frac{1}{3} = \frac{4}{12}$$



$$\frac{1}{4} = \frac{3}{12}$$



$$\frac{7}{12}$$

$$\frac{4}{12} + \frac{3}{12} = \frac{7}{12}$$

7 units of one-twelfth

A response of $\frac{2}{7}$ may treat the numerators and denominators as whole numbers. In twelfths, both quantities use the same-sized unit.

The student may be adding numerators and denominators as if they were whole numbers. Showing the common-denominator procedure again does not address the unit. Ask the student to identify the unit of 1 and represent one-third and one-fourth by partitioning that same unit of 1 into three and four equal parts. Have the student compare the fractional units and determine how both quantities can be expressed using the same-sized unit. When both are expressed in twelfths, the units are the same size and can be combined: 4 twelfths and 3 twelfths are 7 twelfths.

Questions to ask:

"What is the unit of 1?"

"How did you partition the unit of 1 to represent one-third and one-fourth?"

"What unit could we use to express both quantities?"

"How many of those units are in each fraction?"

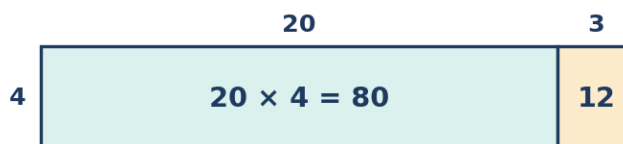
Example 2 · multiplying with place value: 23×4

A response

$$23 \times 4 = 812$$

$2 \times 4 = 8$ and $3 \times 4 = 12$,
written side by side

The area model



$$80 + 12 = 92$$

The 2 in 23 is 2 tens, so 2×4 is 8 tens, or 80.

The area model shows 23 as 20 and 3. The partial products are 80 and 12.

The response suggests the student multiplied the digits separately and wrote the products side by side without accounting for each digit's value. The teacher needs to determine whether the student understands that the 2

in 23 represents 2 tens. An area model that separates 23 into 20 and 3 shows the two partial products, 80 and 12, and their sum, 92. The written procedure records the same partial products.

Questions to ask:

“What does the 2 in 23 represent?”

“What is 20×4 ? Where is it in the area model?”

“Where do 80 and 12 appear in your written work?”

Key Idea • In both examples, the reteaching addresses the unit: one-third and one-fourth in the first, tens and ones in the second.

What You See and What to Ask

A response is evidence to investigate, not a diagnosis. The interpretations below are possibilities to check with the student.

What you see	Possible interpretation	Ask
$1/3 + 1/4 = 2/7$	Adding numerators and denominators as whole numbers	“What is the unit in each fraction?”
$23 \times 4 = 812$	Multiplying digits without attending to place value	“What does the 2 in 23 represent?”
A 6-unit pencil measured as 7	Counting the marks on the ruler rather than the units of length	“Where does the first unit begin? How many units long is it?”
A correct answer, but no explanation of the steps	Following a procedure without connecting it to the quantities	“Why does this step work? Can you show it with a model?”
Correct answers that take a long time	The student may understand the relationship but needs additional practice to improve efficiency.	“How did you solve it? Is there another strategy that would be more efficient?”

The Language Shift

Both columns have a place. The right column adds questions that reveal how the student is reasoning.

Instead of only	Also ask
“Let me show you the steps again.”	“Show me how you thought about it. What does each number represent?”
“Find a common denominator.”	“Why do the units need to be the same size before we add?”
“Do these ten problems.”	“Which of these problems is like the one you missed? How do you know?”
“What is the answer?”	“How do you know your answer makes sense?”

For Coaches

Coaches can help teachers examine student work before deciding what to reteach. Sort a set of responses to one problem by the reasoning they show, not by whether they are correct. Then decide with the teacher which mathematical relationship the reteaching should address and which representation will make it visible.

Questions for a coaching conversation:

- What does this student work tell us about the relationships students understand?
- Which responses show the same reasoning, even with different answers?
- What mathematical relationship did the reteaching address, and what does student work show about how their understanding changed?
- Which students need more practice, and which need to examine the mathematics again?

For School Leaders

Reteaching depends on teachers having time to examine student work together. Leaders can protect that time and ask what assessment results reveal about student reasoning, not only which items students missed.

School leaders can also examine whether intervention schedules give teachers enough time to respond to student thinking and whether students continue to receive grade-level mathematics instruction.

Across the Grades

The same approach applies across grade levels—the mathematics changes.

Grade band	Example	Model	What to examine
Grades K–2	$8 + 5$ solved by counting all from 1	Ten-frame, number path	Whether the student counts all, counts on, or composes a ten to determine the total
Grades 3–5	$\frac{1}{3} + \frac{1}{4} = \frac{2}{7}$	Bar model, number line	The size of each fractional unit
Grades 6–8	$2(x + 3)$ written as $2x + 3$	Area model	Whether both parts of the quantity are multiplied

Continue With DMT Insight 28

Read DMT Insight 28 for the research behind this Companion. Find it at mathsuccess.io/dmtinsights.

Try this for a week. Before you reteach, collect one written explanation or model from each student who missed the problem. Sort the responses by the reasoning they show, and plan the reteaching around the relationship that most students are missing.