

## Unfinished Learning: How to Move Forward When Your GPS is Telling You to Make a U-Turn

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[www.DNAMath.com](http://www.DNAMath.com)

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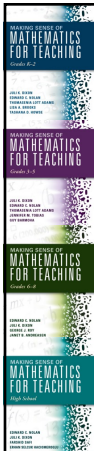
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### Your GPS for Success

1. Be sure that your car is fully loaded.
2. Drive with one eye on the horizon and the other on your rearview mirror (all while staying on the road).
3. Get gas when you need it, not when the tank is already full (or completely empty).
4. Have your car serviced when scheduled (don't wait to break down).

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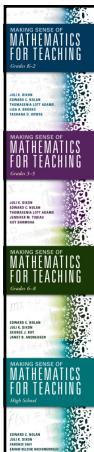
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### Your GPS for Success

1. Choose the right tasks.
2. Facilitate instruction to meet the learning goal while addressing important prerequisites along the way.
3. Provide scaffolding just in time rather than providing it just in case students might need it.
4. Offer accommodations just in case students might need them (they are not the same as scaffolds).

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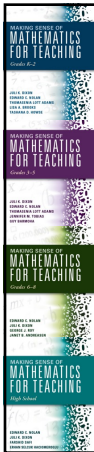
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## Goals for this Session



- Discuss elements of planning with unfinished learning in mind.
- Implement engaging and multifaceted tasks.
- Make sense of strategies and justifications for using formative assessment in real time.

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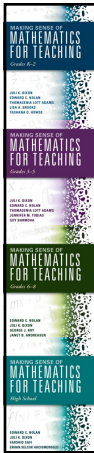
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## Your GPS for Success



**Plan**

1. Before the chapter begins, make sense of:
  - a) The learning goal
  - b) Prerequisites to the learning goal, and
  - c) Common errors connected to both the learning goal and the prerequisites.

**Implement**

2. Implement engaging, multifaceted tasks.

**Assess**

3. Use formative assessment in real time to provide scaffolding just in time rather than just in case.

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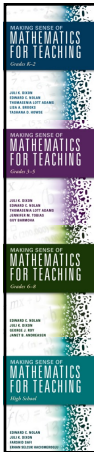
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## Plan



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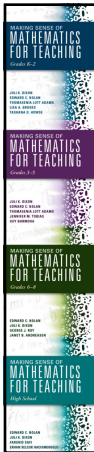
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## Plan

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**MA.3.NSO.2.2: Explore multiplication of two whole numbers with products from 0 to 144, and related division facts.**

- Instruction includes equal groups, arrays, area models and equations.
- Focus on how one problem can be represented in multiple ways and on how the different representations are related to each other.  
(See Benchmarks Clarifications in Big-M for Grade 3)

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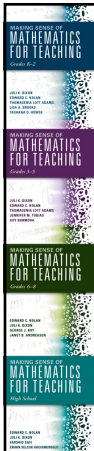
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**MA.3.NSO.2.2: Explore multiplication of two whole numbers with products from 0 to 144, and related division facts.**

MA.2.AR.3.2: Use repeated addition to find the total number of objects in a collection of equal groups. Represent the total number of objects using rectangular arrays and equations. (See Previous Benchmarks in Big-M for Grade 3)

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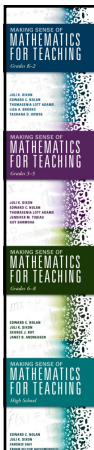
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**MA.3.NSO.2.2: Explore multiplication of two whole numbers with products from 0 to 144, and related division facts.**

Students may not differentiate the number of groups versus number in each group in multiplication, which then impacts their models, expressions, and equations. (See Common Errors in Big-M for Grade 3)

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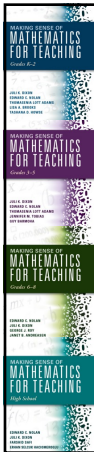
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### Implement



2. Implement engaging, multifaceted tasks.

Use a strategy to determine the product of  $6 \times 7$ .

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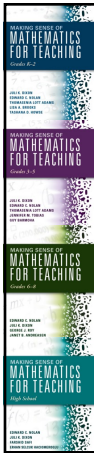
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### Assess



3. Use formative assessment in real time to provide scaffolding just in time rather than just in case.

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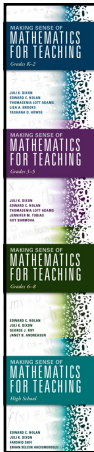
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### How can you use the doubling strategy to multiply?

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**Use tasks with multiple access points.**

**Spark Your Learning**

Imagine you are studying monkeys and how they move. Each monkey has 2 arms and 2 legs. Choose any number of monkeys from 1 to 9 to study. How many arms and legs are there?



Show your thinking.

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Mifflin  
Harcourt**

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**Plan** 

- Before the chapter begins, make sense of:
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**MA.1.NSO.1.3:** Compose and decompose two-digit numbers in multiple ways using tens and ones. Demonstrate each composition or decomposition with objects, drawings and expressions or equations.

**MA.K12.MTR.4.1** Engage in discussions that reflect on the mathematical thinking of self and others.

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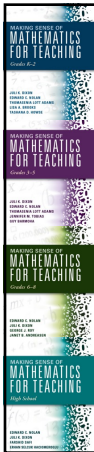
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**Implement**

2. Implement engaging, multifaceted tasks.

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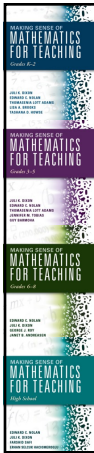
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**Implement**

2. Implement engaging, multifaceted tasks.

How can you make 24?

How would you support students to engage in MTR.4.1? Specifically, how would you support students to communicate their own mathematical ideas while making sense of the ideas of others?

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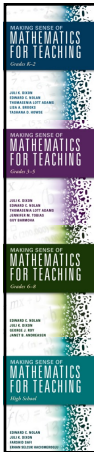
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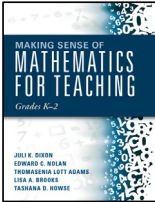
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**Implement**

2. Implement engaging, multifaceted tasks.



Making Sense of Mathematics for Teaching Grades K-2

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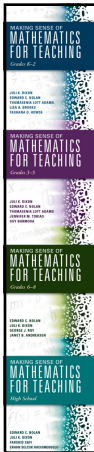
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## Assess ⚠

3. Use formative assessment in real time to provide scaffolding just in time rather than just in case.

How were students supported to engage in MTR.4.1? What would you have done if students struggled?

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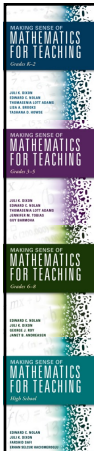
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## Plan ⚠

1. Before the chapter begins, make sense of:

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MA.5.FR.2.1 Add and subtract fractions with unlike denominators, including mixed numbers and fractions greater than 1, with procedural reliability.

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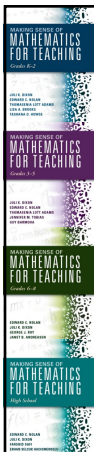
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MA.5.FR.2.1 Add and subtract fractions with unlike denominators, including mixed numbers and fractions greater than 1, with procedural reliability.

naming fractions      equivalent fractions      word problems  
    visual models

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## Implement ⚠

2. Implement engaging, multifaceted tasks.

Brandon shared 4 cookies equally between himself and his 4 friends. He started by giving each person (including himself) a half of a cookie. What could he have done next?

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## Implement ⚠

2. Implement engaging, multifaceted tasks.

How much would person A get?

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## Implement ⚠

2. Implement engaging, multifaceted tasks.

Making Sense of Mathematics for Teaching the Small Group

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**Assess**

3. Use formative assessment in real time to provide scaffolding just in time rather than just in case.

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**Assess**

3. Use formative assessment in real time to provide scaffolding just in time rather than just in case.

What was the thinking behind the common error of  $\frac{1}{3}$ ?

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**Assess**

3. Use formative assessment in real time to provide scaffolding just in time rather than just in case.

What was the thinking behind the common error of  $\frac{1}{5}$ ?

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**Assess** 

What happens when the teacher uses Gradual Release of Responsibility (I do, we do, you do)?

We lose the opportunity to assess what students know and need support to do.

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**Assess** 

Teachers maintain control of the path to the learning goal by providing strategies "as if" they came from the students when necessary (by "detouring" when needed 😊).

"I heard someone say..."

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**Assess** 

Let's return to the cookie problem:

$\frac{1}{2} + \frac{1}{4}$



"I heard someone say the last piece is  $\frac{1}{5}$ "

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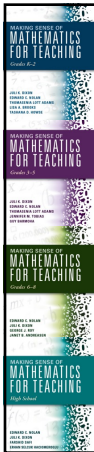
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Don't underestimate...

the power of "shush" 😊

Blog: <https://tinyurl.com/yyz6alrl>

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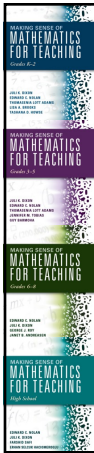
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Assess 

Let's return to the cookie problem:

$$\frac{1}{2} + \frac{1}{4} + \frac{1}{5}$$


Anticipating student errors may be the most important part of anticipating student thinking. This is part of formative assessment!

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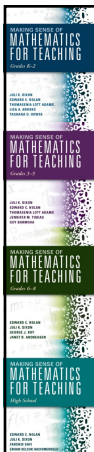
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Cultivating Perseverance

- Just-in-case scaffolding
- Just-in-time scaffolding

Blog: <https://tinyurl.com/y5pcxcoq>

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