

## Continuing the Journey: How to Move Forward When Your GPS is Telling You to Make a U-Turn

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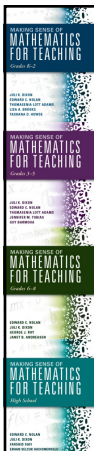
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### Your GPS for Success

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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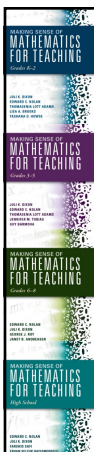
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### Your GPS for Success

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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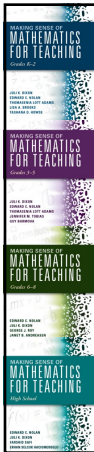
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## Goals for this Session

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

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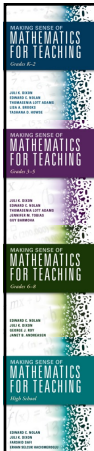
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## Your GPS for Success

**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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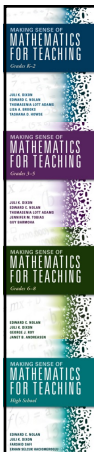
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## Plan

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.

Apply properties of operations as strategies to multiply and divide.

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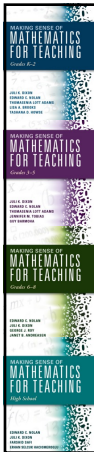
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## Plan

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Apply properties of operations as strategies to multiply and divide.

- Interpret products of whole numbers, e.g., interpret  $5 \times 7$  as the total number of objects in 5 groups of 7 objects each.
- Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.

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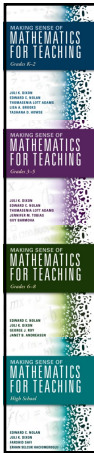
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## Plan

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Apply properties of operations as strategies to multiply and divide.

In grade 2 students connected repeated addition to equal grouping situations.

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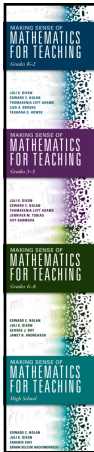
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## Plan

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Apply properties of operations as strategies to multiply and divide.

Students may confuse the roles of the factors so that their equations do not model their representations.

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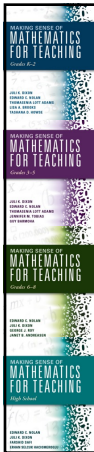
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### Implement ⚠

2. Implement engaging, multifaceted tasks.

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

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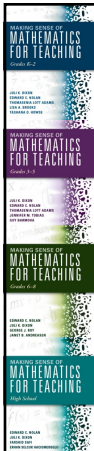
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### Implement ⚠

2. Implement engaging, multifaceted tasks.

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

We need to understand the different models to see how we can move students' learning forward.

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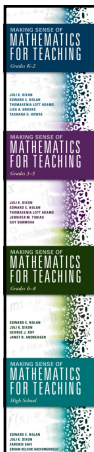
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### Assess ⚠

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

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6 x 7

Consider this video



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Plan 

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

Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.

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Plan 

- Before the chapter begins, make sense of:
  - The learning goal
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Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.

naming fractions  
visual models  
equivalent fractions  
word problems

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**Plan** 

1. Before the chapter begins, make sense of:

- The learning goal
- Prerequisites to the learning goal, and
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Represent and solve addition and subtraction of fractions with unequal denominators referring to the same whole using objects and pictorial models and properties of operations.

There are so many!

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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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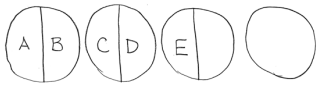
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**Implement** 

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**

So how much of a cookie 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 ☺).

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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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Don't underestimate...

the power of “shush” ☺

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

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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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**Plan**

- Before the chapter begins, make sense of:
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Solve systems of two linear equations with two variables for mathematical and real-world problems

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**Implement**

Father (F) & Son (S) Race

Write a story that matches the graph.

Be sure to include what is occurring at A, B, and C as well as the intervals in between.

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**Assess**

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**MAKING SENSE OF MATHEMATICS FOR TEACHING**  
High School

EDWARD C. NOLAN  
JULI K. DIXON  
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ERHAN SELCUK HACIOMERGLU

Making Sense of Mathematics for Teaching High School

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**Cultivating Perseverance**

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

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

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