# Strategies to Support Procedural Fluency in Mathematics

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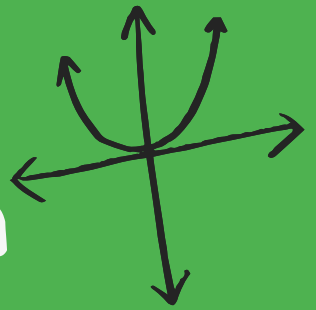
$E = mc^2$

# Outcomes

- Define and understand procedural fluency.
- Learn how Reveal supports procedural fluency for our students.
- Learn how to support our students at home.

# AACPS K-5 Mathematics Vision

Our vision is to ensure an **accessible**, high quality mathematics education through a community of mathematically **proficient** learners who continually find the beauty of mathematics and all the opportunities mathematics affords.



"The way in which fluency is taught either supports equitable learning or prevents it."

$$A = \left(\frac{b_1 + b_2}{2}\right)h$$

NCTM *Procedural Fluency*

# Defining Procedural Fluency

# What is Procedural Fluency...

$a^2 + b^2 = c^2$

## Think, Write, Pair, Share

- Think about your definition of procedural fluency.
- Write your definition on a post-it note.
- Pair with a neighbor to share your definition.
- Share highlights from your discussion with the group.

# What is Procedural Fluency...

$a^2 + b^2 = c^2$

- The ability to apply procedures efficiently, flexibly, and accurately
- To transfer procedures to different problems and contexts
- To build or modify procedures from other procedures
- To recognize when one strategy or procedure is more appropriate than another

How can you find the total number of snack bars using mental math?


$a^2 + b^2 = c^2$

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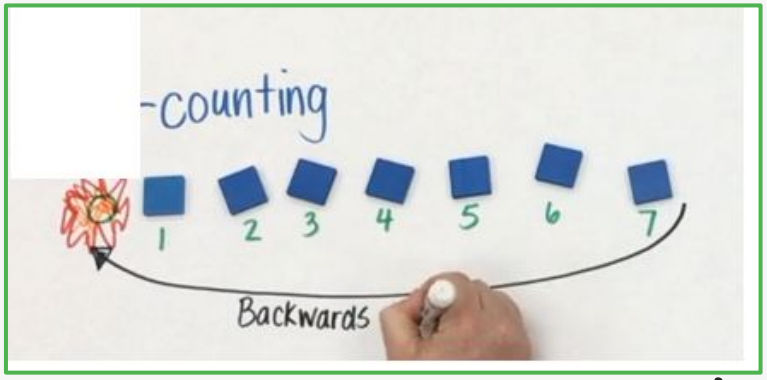
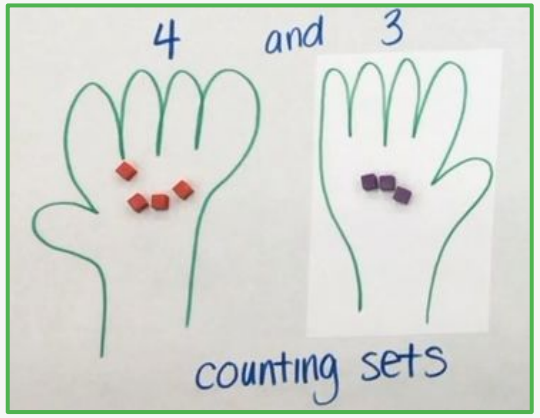
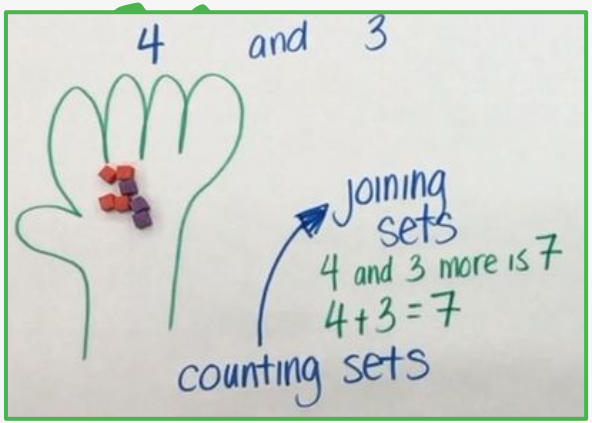
# How is the progression of addition and subtraction rooted in conceptual understanding?

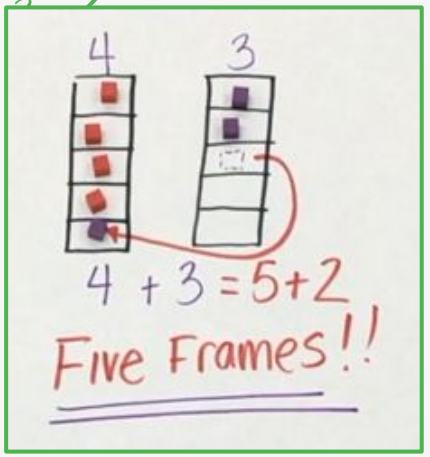


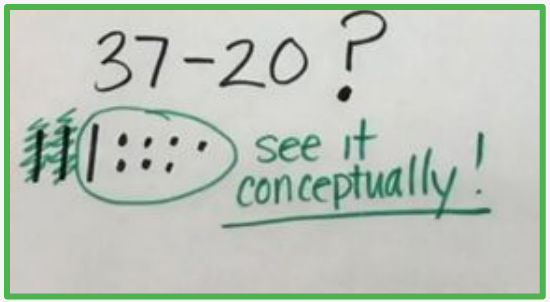



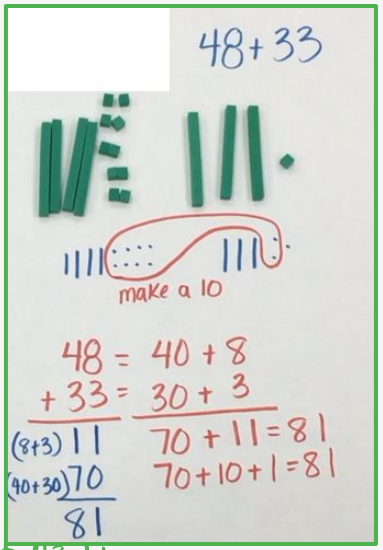

# How do these strategies connect?

$$A = \left(\frac{b_1 + b_2}{2}\right)h$$



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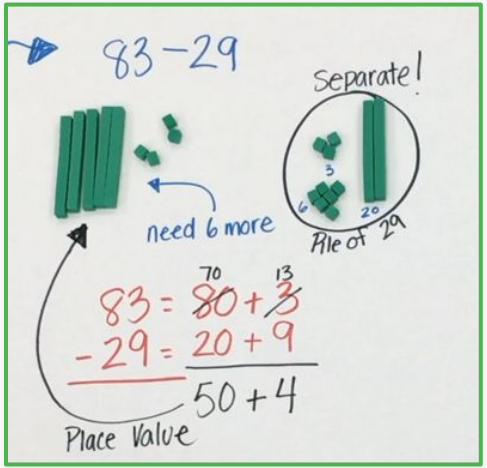
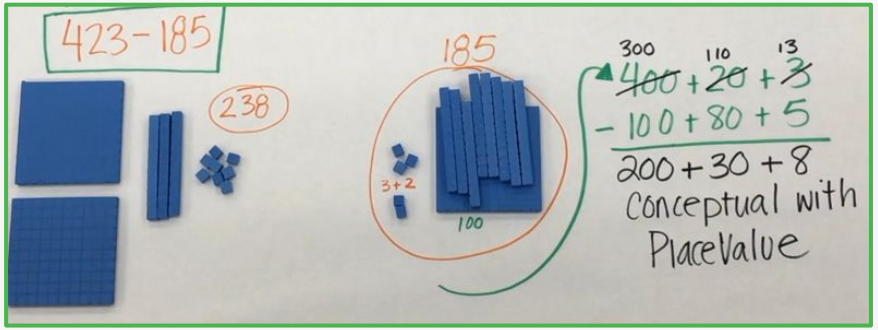
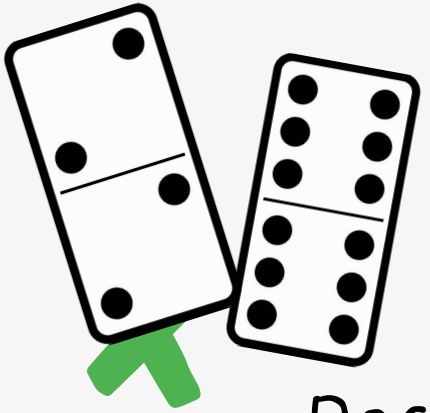


Let's explore some strategies your children will learn to support their procedural fluency.

# Strategies that Support Procedural Fluency

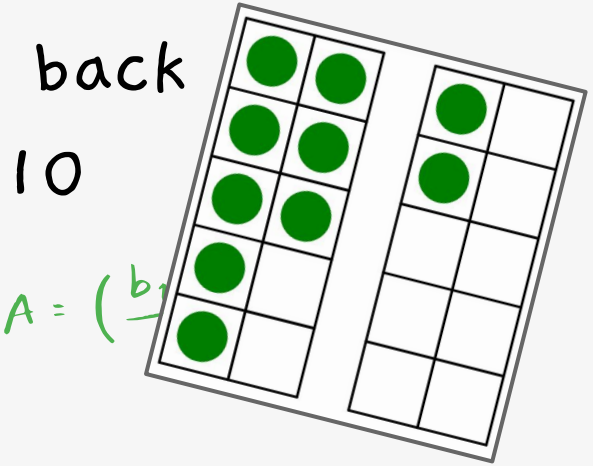


Counting on, Counting back

Make a 5, Make a 10

Doubles

Doubles plus 1



Decomposing/Breaking apart numbers

Regrouping

- Basic fact memorization
- Applying algorithms
- Applying procedures

# What is NOT Procedural Fluency...

# How are strategies taught in school?

Conceptual Understanding must precede and coincide with instruction on procedures.

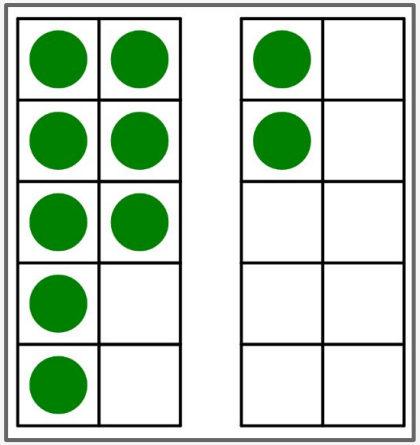
Procedural fluency requires having a repertoire of strategies.

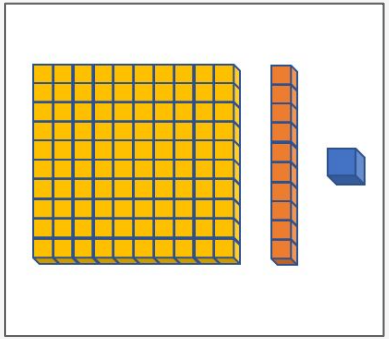
Basic facts should be taught using number relationships and reasoning strategies, NOT memorization.

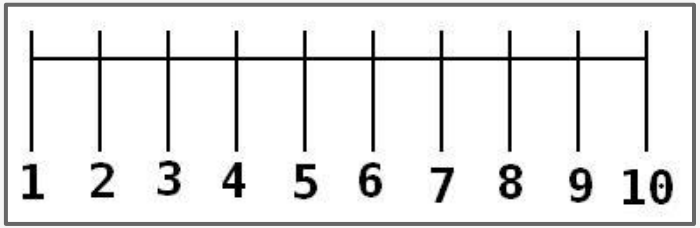
Assessing must attend to fluency components and the learner.

# How does my child learn strategies through the Reveal curriculum?

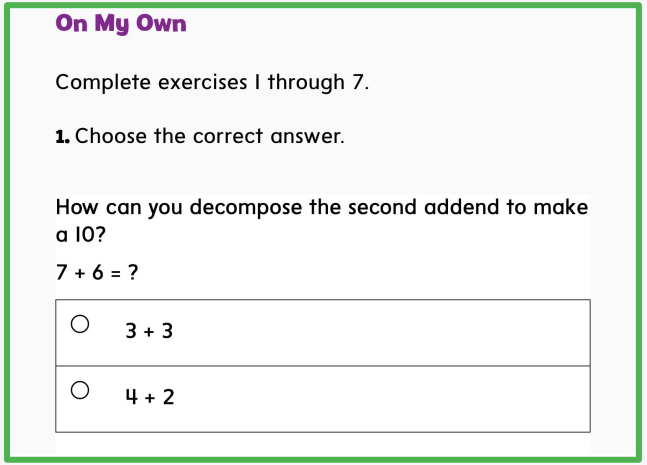
Through the use of manipulatives and tools.








Opportunities to practice on their own,



**On My Own**

Complete exercises 1 through 7.

**1.** Choose the correct answer.

How can you decompose the second addend to make a 10?

7 + 6 = ?

- ○ 3 + 3
- ○ 4 + 2

How do I help my child practice these strategies at home?

AACPS Math

**AACPS Elementary Math - Family Involvement Conference**
**October 21, 2023**

AACPS Math

**Strategies that support procedural fluency in primary grades.**

| | |
|---|---|
| Counting on | Start at a number and count forward or up to another number |
| Counting back | Start at a number and count back to a designated number |
| Make a 5 | 0 + 5; 1 + 4; 2 + 3 |
| Make a 10 | 0 + 10; 1 + 9; 2 + 8; 3 + 7; 4 + 6; 5 + 5 |
| Doubles | 1 + 1; 5 + 5; 8 + 8, etc. |
| Doubles plus 1 | 6 + 6 + 1: I know 7 + 6 is 13 because 6 + 6 is 12 and 1 more is 13. |
| Decomposing/Breaking apart numbers | I know 8 + 5 is 13 because 2 +3 is 5. I can add 8 + 2 which equals 10 and add 3 more to get 13. |

**How can I help my child at home?**

- ☐ Have conversations with your child about what they learned at school.
- ☐ Access their books online and discuss the strategies they practiced at school.
- ☐ Have your child access the math replay in their online resource to learn the strategy they practiced that day.
- ☐ Set up a time with your child's teacher to have them teach you the strategies your child is learning.
- ☐ Play games. Many games require adding and subtracting to move places on the game board or to add and subtract money.
    - ☐ Dice, playing cards, and Uno cards are great for counting, adding, and subtracting numbers.
- ☐ Think about how you use numbers daily and share this with your child. This can include but is not limited to gardening, home repairs, cooking, shopping, paying bills, planning a party, etc.
- ☐ Have your children think about how they use numbers when they're not in school and share it with you.

Procedural fluency requires having a repertoire of strategies.

"Students should be able to flexibly use and adapt strategies and switch to a different strategy when their first choice is not working well."

NCTM *Procedural Fluency*

# Moving from...

How did my teacher show me how to do this?

Which of the strategies that I know are a good fit for this problem?

# Questions??

Thank you for coming to our session!