

Fluency

FACTS OR FICTION?

GRADES PK-2

FRIDAY, APRIL 27TH 8:00AM
CONVENTION CENTER - 201

Presented by

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Goals

1. Understand the meaning of fluency
2. Consider instructional strategies for building and practicing fluency
3. Identify methods for assessing fluency

Why is fact
fluency
important?



Fluency Across the Grades

Grade	Standard	Required Fluency
K	K.OA.5	Add/subtract within 5
1	1.OA.6	Add/subtract within 10
2	2.OA.2 2.NBT.5	Add/subtract within 20 (know single-digit sums from memory) Add/subtract within 100
3	3.OA.7 3.NBT.2	Multiply/divide within 100 (know single-digit products from memory) Add/subtract within 1000
4	4.NBT.4	Add/subtract within 1,000,000
5	5.NBT.5	Multi-digit multiplication
6	6.NS.2,3	Multi-digit division Multi-digit decimal operations



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Components of Fluency



Conceptual Understanding of Basic Facts

- You get 10 seconds to memorize a list of 12 words:

hair	sat	chair	with
red	girl	curly	a
in	little	the	brown

- Write down as many words as you can remember.

Conceptual Understanding of Basic Facts

- You get 10 seconds to memorize a list of 12 words:

A girl with curly red hair sat in the little brown chair.

- Write down as many words as you can remember.



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“Fluency in each grade involves a mixture of **just knowing** some answers, knowing some answers from **patterns**, and knowing some answers from the **use of strategies**...

[recognize] that fluency will be a mixture of these kinds of thinking which may differ across students.”

(CC/OA Progressions, 2011)



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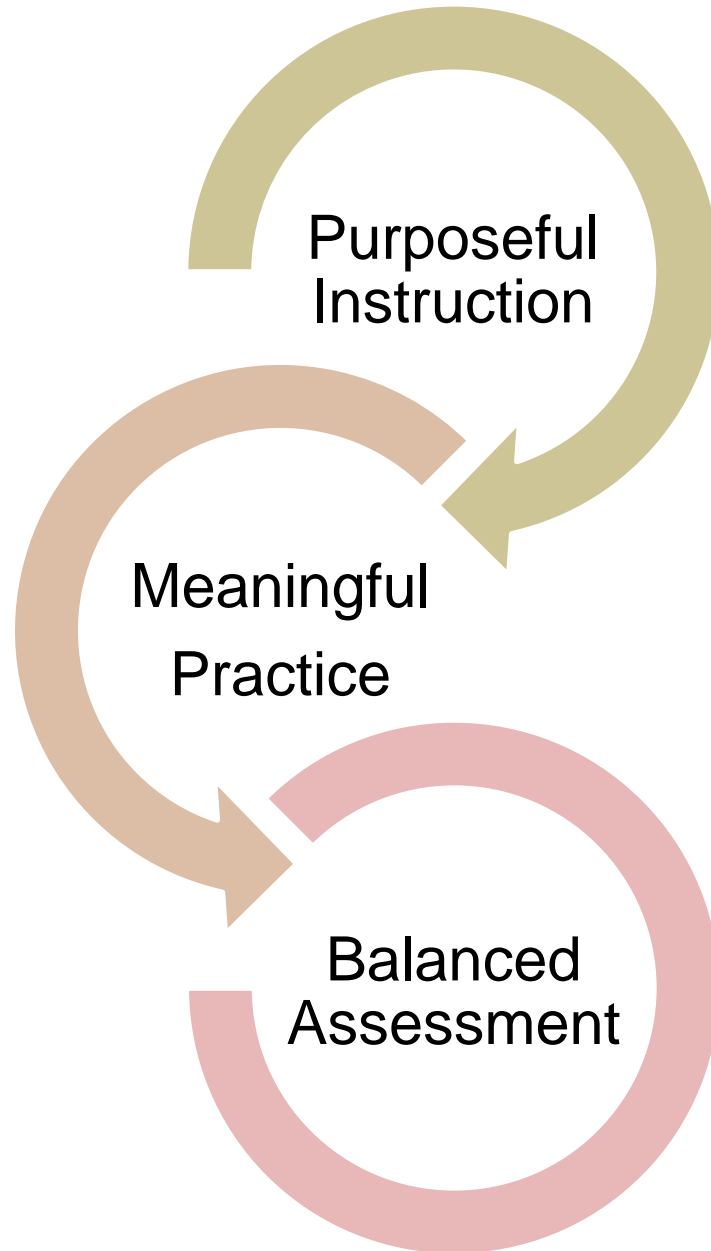
Facts Chart

$0 + 0$	$1 + 0$	$2 + 0$	$3 + 0$	$4 + 0$	$5 + 0$	$6 + 0$	$7 + 0$	$8 + 0$	$9 + 0$	$10 + 0$
$0 + 1$	$1 + 1$	$2 + 1$	$3 + 1$	$4 + 1$	$5 + 1$	$6 + 1$	$7 + 1$	$8 + 1$	$9 + 1$	$10 + 1$
$0 + 2$	$1 + 2$	$2 + 2$	$3 + 2$	$4 + 2$	$5 + 2$	$6 + 2$	$7 + 2$	$8 + 2$	$9 + 2$	$10 + 2$
$0 + 3$	$1 + 3$	$2 + 3$	$3 + 3$	$4 + 3$	$5 + 3$	$6 + 3$	$7 + 3$	$8 + 3$	$9 + 3$	$10 + 3$
$0 + 4$	$1 + 4$	$2 + 4$	$3 + 4$	$4 + 4$	$5 + 4$	$6 + 4$	$7 + 4$	$8 + 4$	$9 + 4$	$10 + 4$
$0 + 5$	$1 + 5$	$2 + 5$	$3 + 5$	$4 + 5$	$5 + 5$	$6 + 5$	$7 + 5$	$8 + 5$	$9 + 5$	$10 + 5$
$0 + 6$	$1 + 6$	$2 + 6$	$3 + 6$	$4 + 6$	$5 + 6$	$6 + 6$	$7 + 6$	$8 + 6$	$9 + 6$	$10 + 6$
$0 + 7$	$1 + 7$	$2 + 7$	$3 + 7$	$4 + 7$	$5 + 7$	$6 + 7$	$7 + 7$	$8 + 7$	$9 + 7$	$10 + 7$
$0 + 8$	$1 + 8$	$2 + 8$	$3 + 8$	$4 + 8$	$5 + 8$	$6 + 8$	$7 + 8$	$8 + 8$	$9 + 8$	$10 + 8$
$0 + 9$	$1 + 9$	$2 + 9$	$3 + 9$	$4 + 9$	$5 + 9$	$6 + 9$	$7 + 9$	$8 + 9$	$9 + 9$	$10 + 9$
$0 + 10$	$1 + 10$	$2 + 10$	$3 + 10$	$4 + 10$	$5 + 10$	$6 + 10$	$7 + 10$	$8 + 10$	$9 + 10$	$10 + 10$

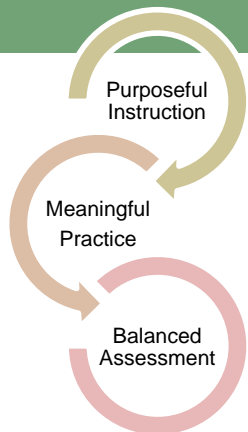


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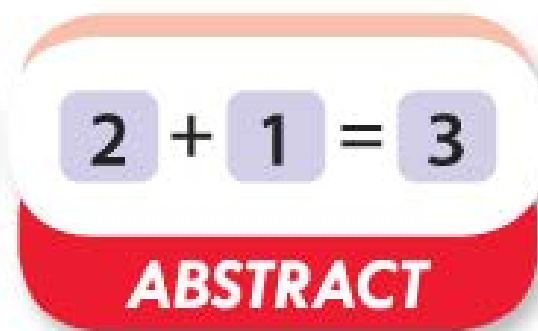
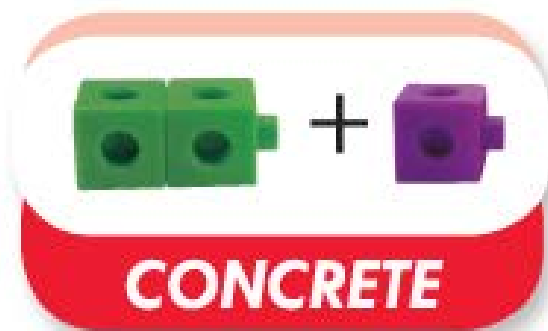
Fluency



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Purposeful Math Instruction



How are you...

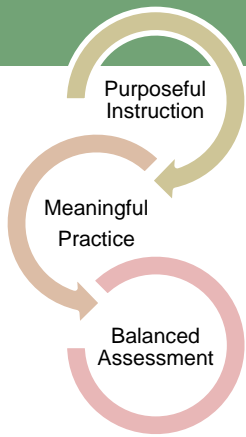
Practicing Fluency?



Assessing Fluency?



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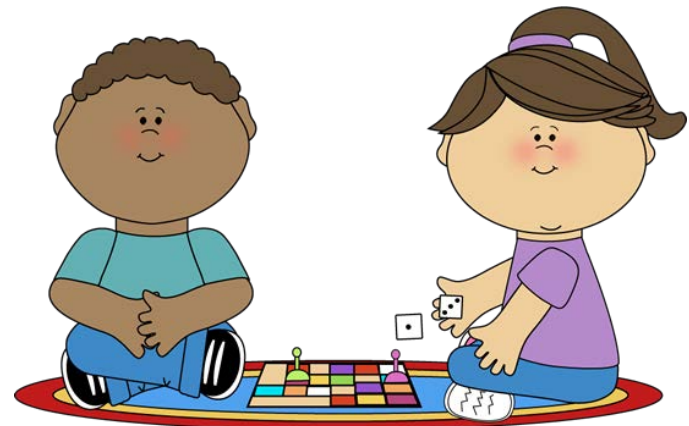


Meaningful Practice

❖ Number Talks

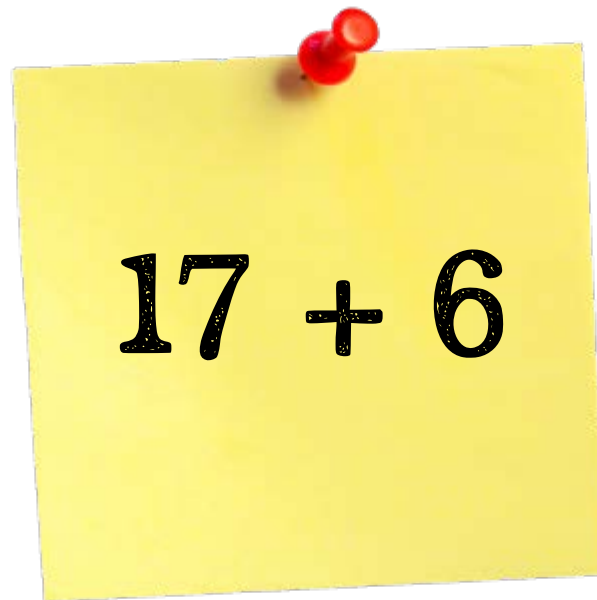


❖ Hands-On Games



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Number Talk



$17 + 6$



Fluency Games



Player 1: _____

101 and Out		
	Tens	Ones
1		
2		
3		
4		
5		
6		
Total		

Player 2: _____

101 and Out		
	Tens	Ones
1		
2		
3		
4		
5		
6		
Total		



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Compare to Reading...

Think about how you assess a student's reading ability:

- *Do you **time** students to see how many words they can read correctly in a specified amount of time?*
- *Do you **listen** and **observe** as they read?*
- *Do you **ask** questions to see if they understand what they're reading?*



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Assessing Basic Fact *Fluency*

Have you had it with timed tests, which present a number of concerns and limitations? Try a variety of alternative assessments from this sampling that allows teachers to accurately and appropriately measure children's fact fluency.

By Gina Kling and Jennifer M. Bay-Williams

Think about how you assess reading fluency. Does your assessment plan involve listening and observing as children read as well as asking reading comprehension questions? Now imagine what you might learn about students' reading fluency if you used *only* timed quizzes. How would your confidence in your assessment change?

Formative assessments—including observations



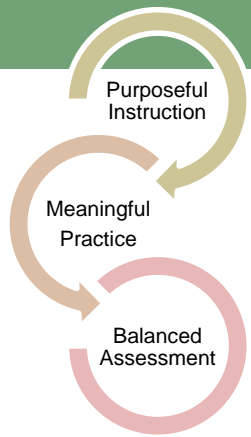
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*“Timed tests offer little insight about how **flexible** students are in their use of strategies or even which strategies a student selects. And evidence suggests that **efficiency** and **accuracy** may actually be negatively influenced by timed testing.”*

(Assessing Basic Fact Fluency, pg. 490)



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Balanced Assessment

Observations

Interviews

Journaling

Quizzes



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Observations & Interviews

Date	Fact	Level 1: Count All	Level 2: Count On/Back	Level 3: Derived Facts	Notes
		-Mentally -Tool: _____	-Mentally -Fingers	-Known Fact -Strategy: _____	
		-Mentally -Tool: _____	-Mentally -Fingers	-Known Fact -Strategy: _____	
		-Mentally -Tool: _____	-Mentally -Fingers	-Known Fact -Strategy: _____	
		-Mentally -Tool: _____	-Mentally -Fingers	-Known Fact -Strategy: _____	
		-Mentally -Tool: _____	-Mentally -Fingers	-Known Fact -Strategy: _____	
		-Mentally -Tool: _____	-Mentally -Fingers	-Known Fact -Strategy: _____	

Journaling

TABLE 3

This collection of prompts addresses the four components of fluency with basic facts. Writing about their strategies on a weekly basis engages students in self-reflection and monitoring, as well as emphasizes the importance of strategies in practicing basic facts.

Writing prompts for developing fluency with the basic facts

Appropriate strategy selection

- Explain how to use the "count on" strategy for $3 + 9$.
- What strategy did you use to solve $6 + 8$?
- A friend is having trouble with some of his times 6 facts. What strategy might you teach him?
- Emily solved $6 + 8$ by changing it in her mind to $4 + 10$. What did she do? Is this a good strategy? Tell why or why not.

Flexibility

- How can you use 7×10 to find the answer to 7×9 ?
- Solve 6×7 using one strategy. Now try solving it using a different strategy.
- Emily solved $6 + 8$ by changing it in her mind to $4 + 10$. What did she do? Does this strategy always work?

Efficiency

- What strategy did you use to solve $9 + 3$?
- How can you use 7×7 to solve 7×8 ?
- Which facts do you "just know"? For which facts do you use a strategy?

Accuracy

- Crystal explains that $6 + 7$ is 12. Is she correct? Explain how you know.
- What is the answer to 7×8 ? How do you know it is correct (how might you check it)?

Creative writing ideas that address several components

- Develop a "Face the facts" or "Ask Cougar" column (like Dear Abby) for the class. (Pick a fun name for the column that makes sense for the class, such as the school mascot.) Students send a letter about a tough fact. Rotate different students into the role of responder. The responder writes letters back, suggesting a strategy for the tough fact.
- Create a strategy rhyme (e.g., If times four is giving me trouble, I'll remember to double and double).
- Make a facts survival guide. Children prepare pages illustrating with visuals (e.g., ten frames or arrays) of how find "tough" facts.
- Write a yearbook entry to some facts (e.g., Dear 8×7 , I ...)

(See McIntosh 1997 for many more ideas).

FIGURE 2

Various responses to a journal prompt illustrate the strategies that first graders used and reveal which children were able to appropriately select and explain an efficient strategy for the task.

If your friend did not know the answer to $4 + 5$, how could he figure it out?

MAY 10, 2012
I would tell my friend
to take 5 and
count 4 in your hand

I would tell my friend to
start with 5 then add 2
then one more 2 and then
you have 9.

I would tell my friend to use a
double plus 1. $4 + 4 = 8$ so count
1 up now you get your answer.

I would tell my friend
to take away one
number from ten.
And that is nine.
I know that five plus
five equals ten.

Quiz Adaptations

- Choose one of the problems and write about how you solved it.
- Tell which helper fact you used the most.
- Circle facts you “just knew.” Highlight those for which you used a strategy.

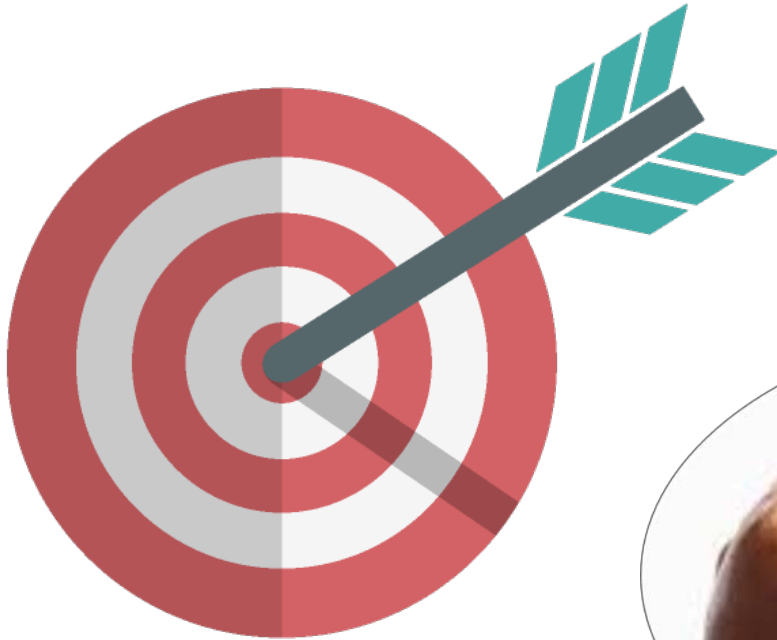


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Goals Revisited

1. Understand the meaning of fluency
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3. Identify methods for assessing fluency

Validation & Commitment



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Fluency Resources



<http://bit.ly/factsorfiction18>