Five Essential Components Of Effective Mathematics Intervention

sarahpowellphd.com

Evidence-based mathematics resources for educators

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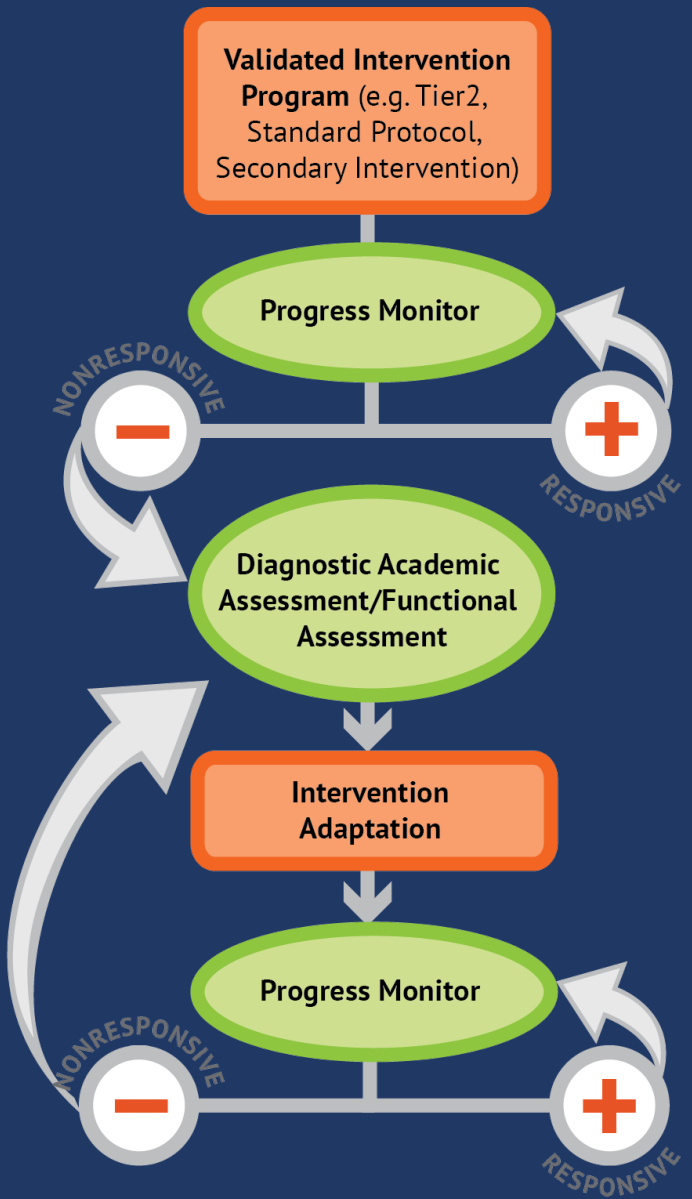
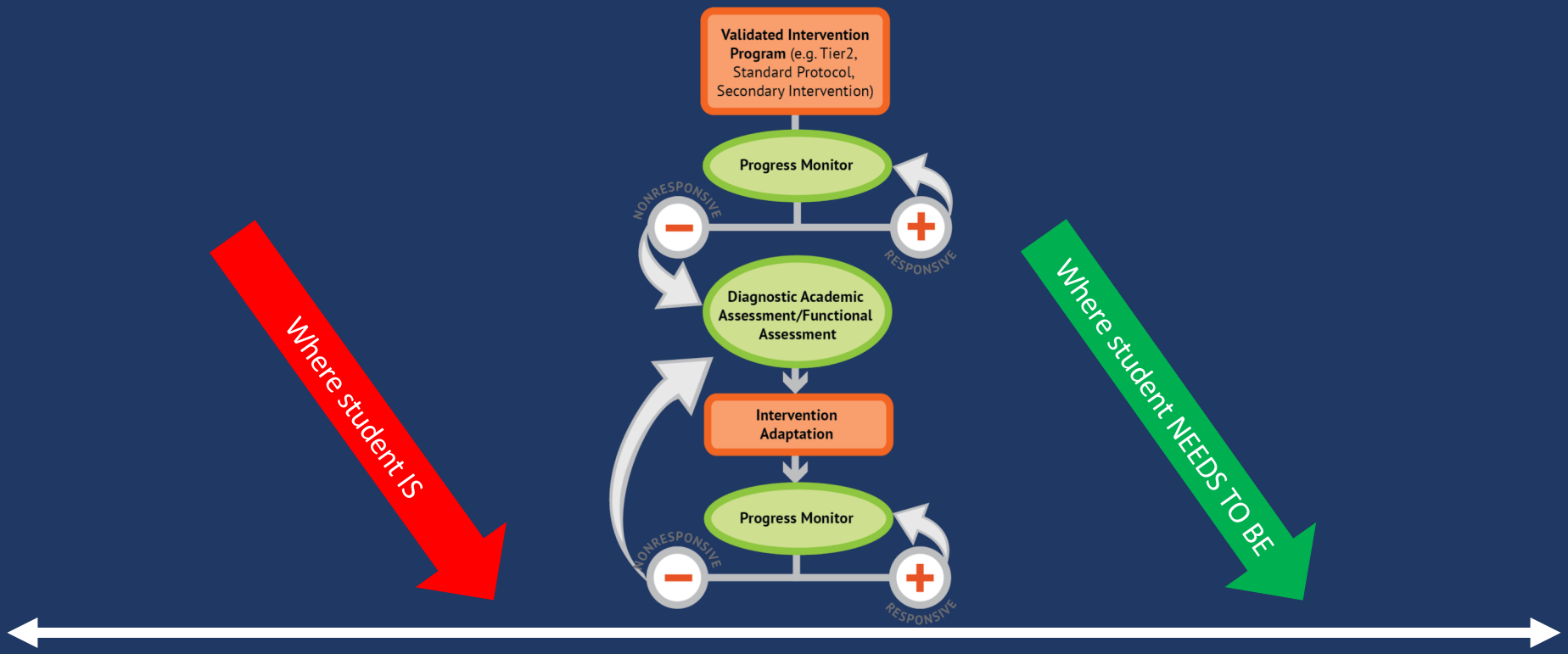
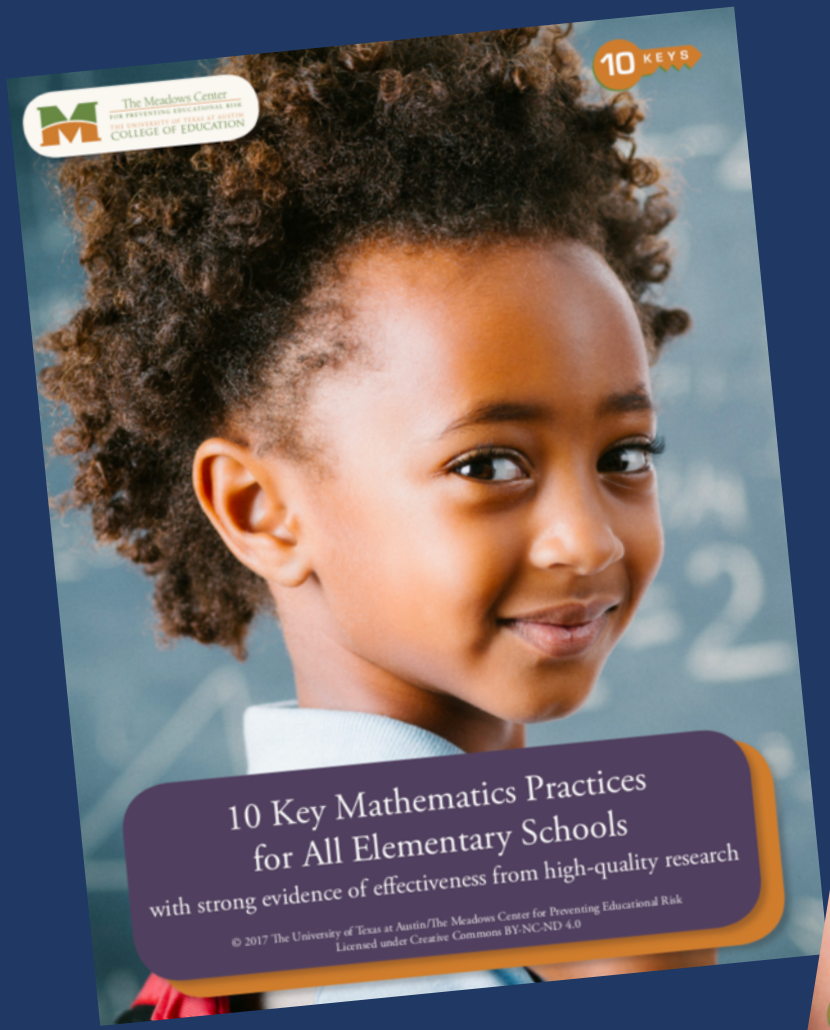


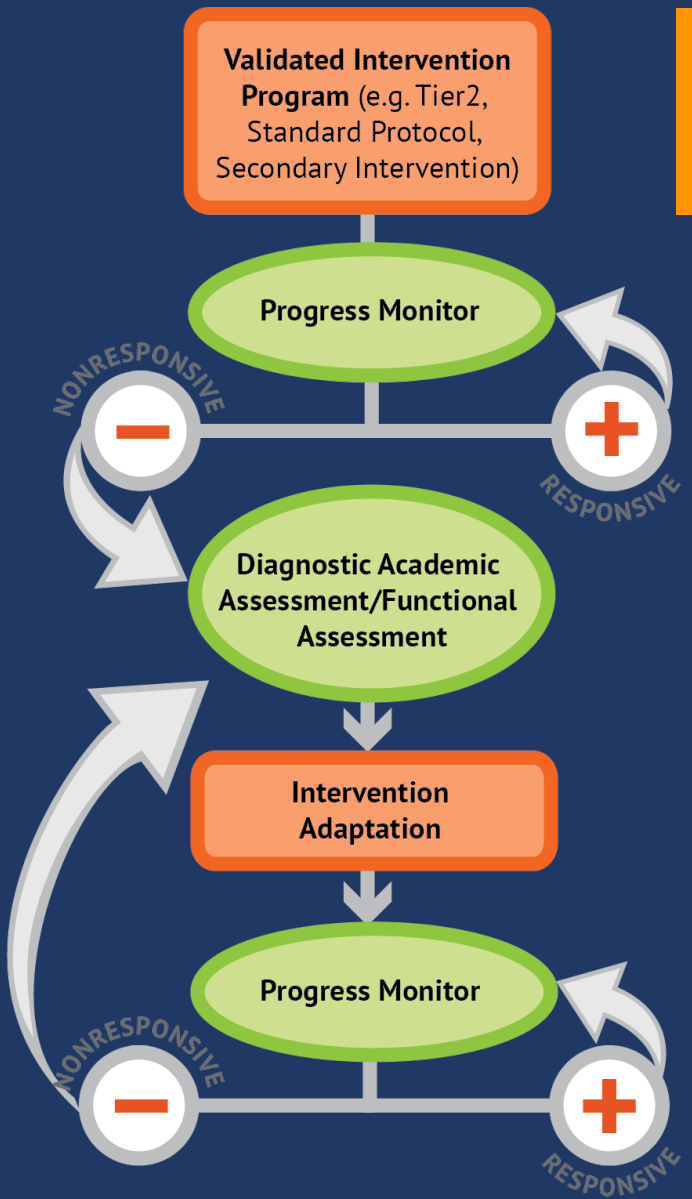
https://www.intensiveintervention.org





https://www.meadowscenter.org/files/resources/10Keys_ElemMath_Web.pdf

https://www.meadowscenter.org/files/resources/10Keys_SecMath_Web.pdf



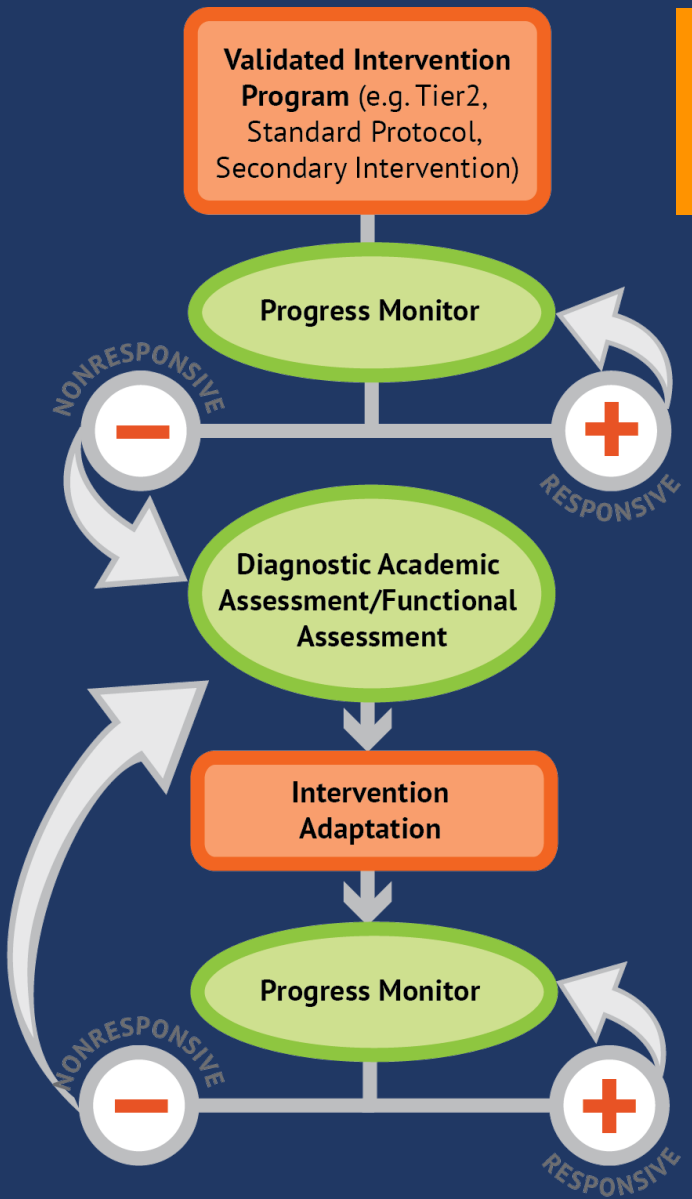
Instructional Platform

INSTRUCTIONAL DELIVERY

- Explicit instruction
- Precise language
- Multiple representations

INSTRUCTIONAL STRATEGIES

- Fluency building
- Problem solving instruction



Instructional Platform

INSTRUCTIONAL DELIVERY

Explicit instruction

INSTRUCTIONAL STRATEGIES

Modeling	Practice
Clear Explanation	Guided Practice
Planned Examples	Independent Practice

Supports

- Asking the right questions
- Eliciting frequent responses
- Providing immediate specific feedback
- Maintaining a brisk pace

Goal and importance

Modeling

- Clear Explanation
- Planned Examples

"Today, we are learning about division. This is important because sometimes you have to share objects or things with your friends."

"Let's continue working with our three-dimensional shapes and volume. Understanding volume and calculating volume helps with measuring capacity."

Modeling

Clear Explanation

Planned Examples

Goal and importance

Model steps

"To solve 26 plus 79, I first decide about the operation. Do I add, subtract, multiply or divide?"

"The plus sign tells me to add. So, I'll add 26 plus 79. I'll use the partial sums strategy. First, I add 20 plus 70. What's 20 plus 70?"

"20 plus 70 is 90. I write 90 right here under the equal line. Where do I write 90?"

"Then I add 6 plus 9. What's 6 plus 9?"

"6 plus 9 is 15. So, I write 15 here."

"Finally, we add the partial sums: 90 and 15. 90 plus 15 is 105. So, 26 plus 79 equals 105."

Modeling

Clear Explanation

Planned Examples

Goal and importance

Model steps

With examples

"Today, we are learning about division. This is important because sometimes you have to share objects or things with your friends."

$24 / 6$ $28 \div 7$ $5\overline{)35}$

Modeling

Clear Explanation

Planned Examples

Goal and importance

Model steps

With examples

With non-examples

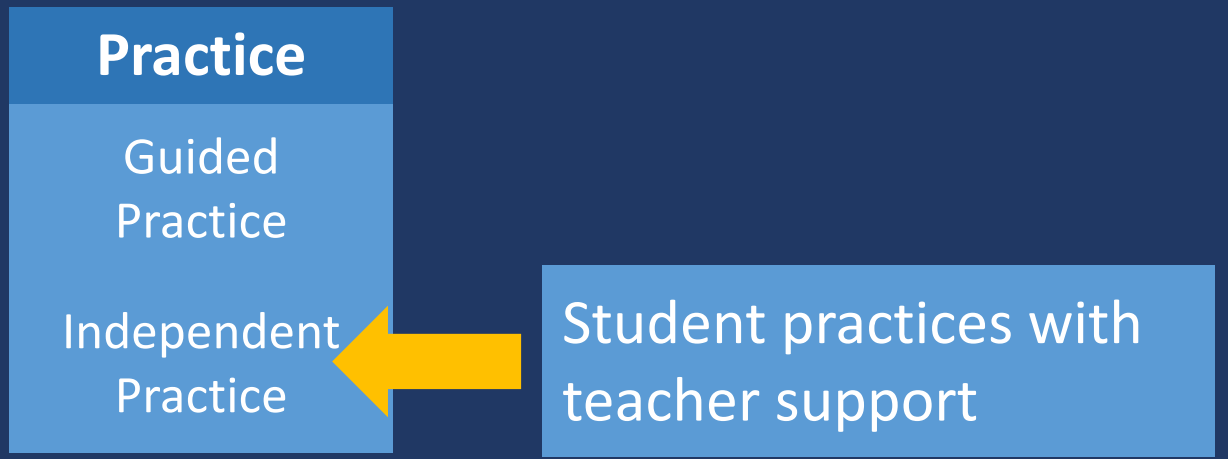
"Today, we are learning about division. This is important because sometimes you have to share objects or things with your friends."

32 ÷ 8 **42 ÷ 7** **25 – 5**

Practice

Guided Practice

Independent Practice



Low-level and high-level

"What is 7 times 9?"

"Which shape has 6 sides?"

"What do you do when you see a word problem?"

"Why do you have to regroup?"

"How would you solve this problem?"

"Why do you have to use zero pairs?"

Supports

- Asking the right questions
- Eliciting frequent responses
- Providing immediate specific feedback
- Maintaining a brisk pace

Low-level and high-level

Classwide, individual, partner, write on paper, write on whiteboard, thumbs up, etc.

"Turn and discuss the formula for perimeter with your partner."

"Write the multiplication problem on your whiteboard."

"In your math journal, draw a picture to help you remember to term *parallelogram*."

Supports

- Asking the right questions
  Eliciting frequent responses
- Providing immediate specific feedback
- Maintaining a brisk pace

Low-level and high-level

Classwide, individual, partner, write on paper, write on whiteboard, thumbs up, etc.

Affirmative and corrective

Supports

- Asking the right questions
- Eliciting frequent responses
- Providing immediate specific feedback
- Maintaining a brisk pace

"Good work using your word-problem attack strategy."

"Let's look at that again. Tell me how you added in the hundreds column."

Low-level and high-level

Classwide, individual, partner, write on paper, write on whiteboard, thumbs up, etc.

Affirmative and corrective

Planned and organized

Supports

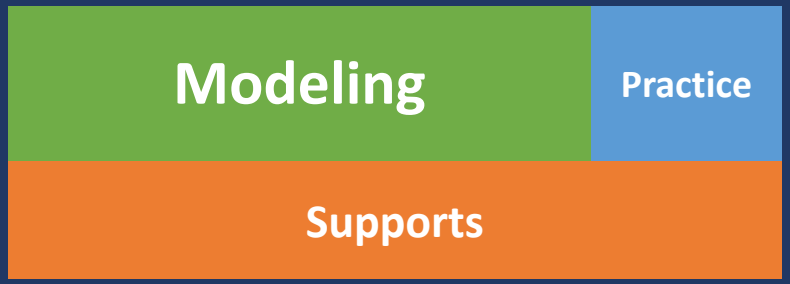
- Asking the right questions
- Eliciting frequent responses
- Providing immediate specific feedback
- Maintaining a brisk pace

Modeling	Practice
Clear Explanation	Guided Practice
Planned Examples	Independent Practice

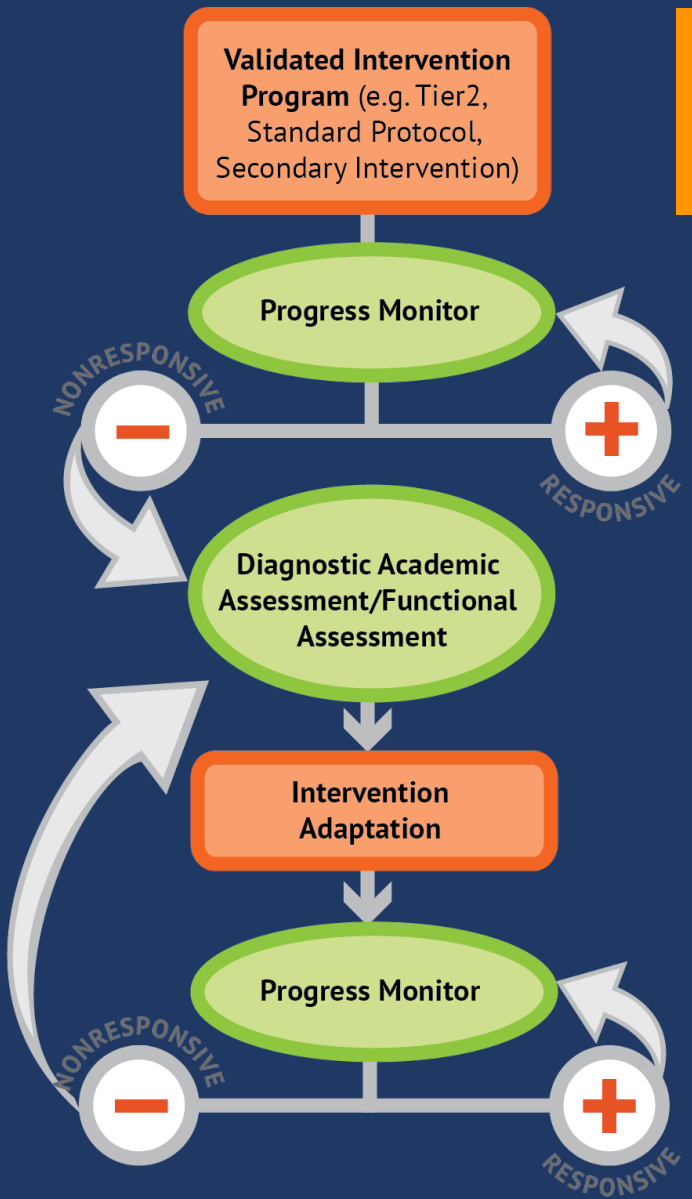
Supports

- Asking the right questions
- Eliciting frequent responses
- Providing immediate specific feedback
- Maintaining a brisk pace

Introduction of material



Review of material



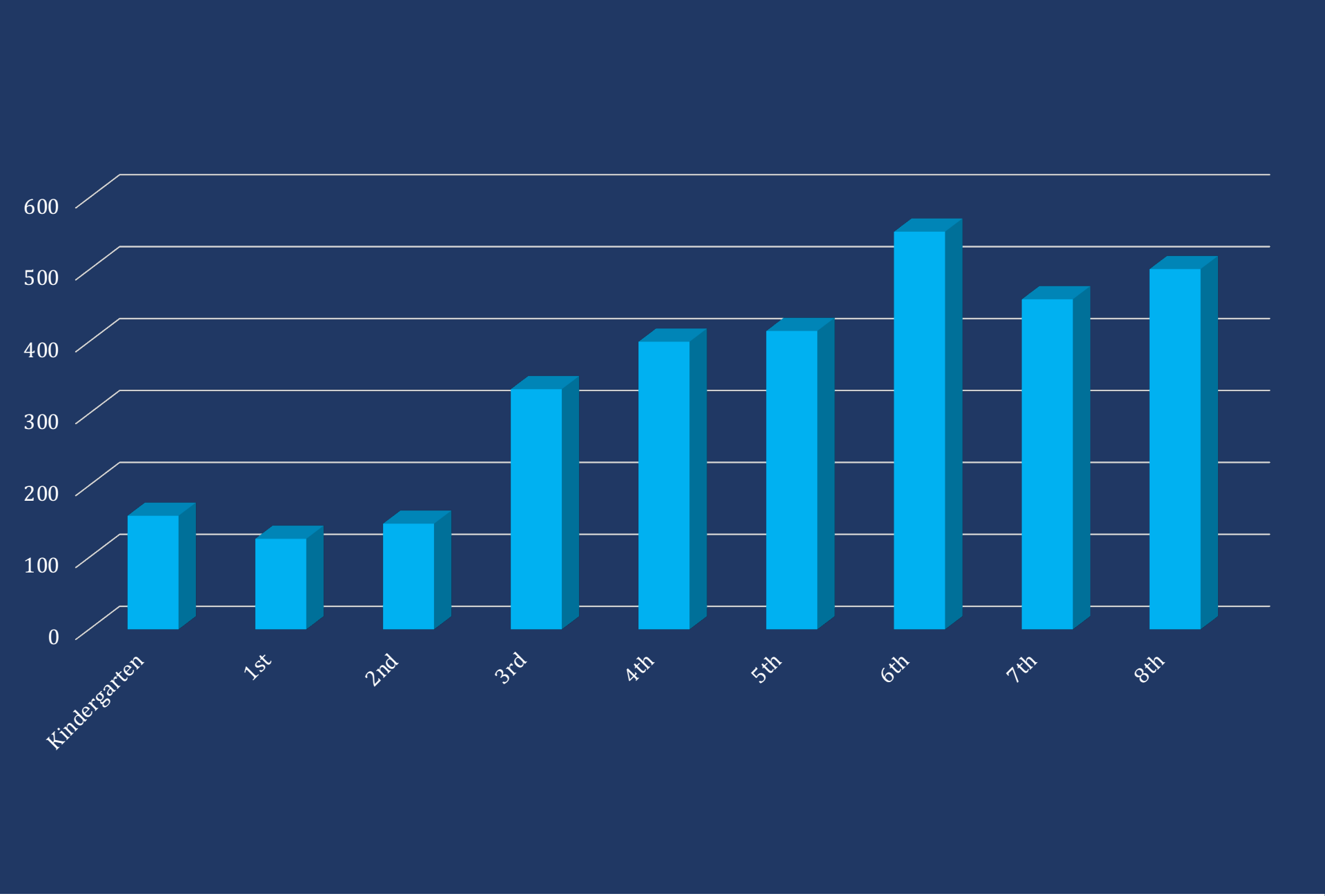
Instructional Platform

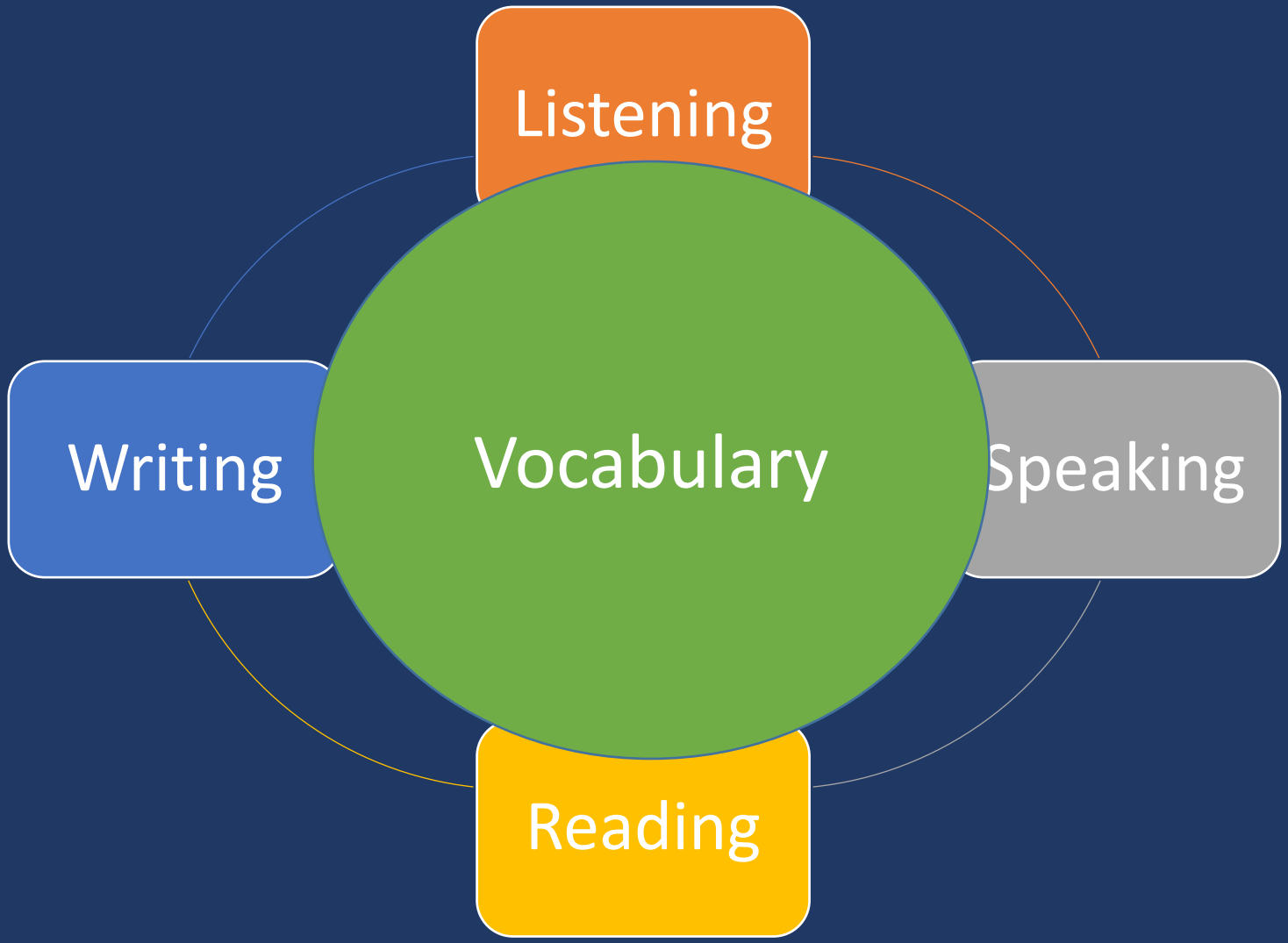
INSTRUCTIONAL DELIVERY

Explicit instruction

Precise language

INSTRUCTIONAL STRATEGIES





Use formal math language

Use terms precisely

Technical terms

trapezoid | rhombus | numerator | addend | subtract

Subtechnical terms

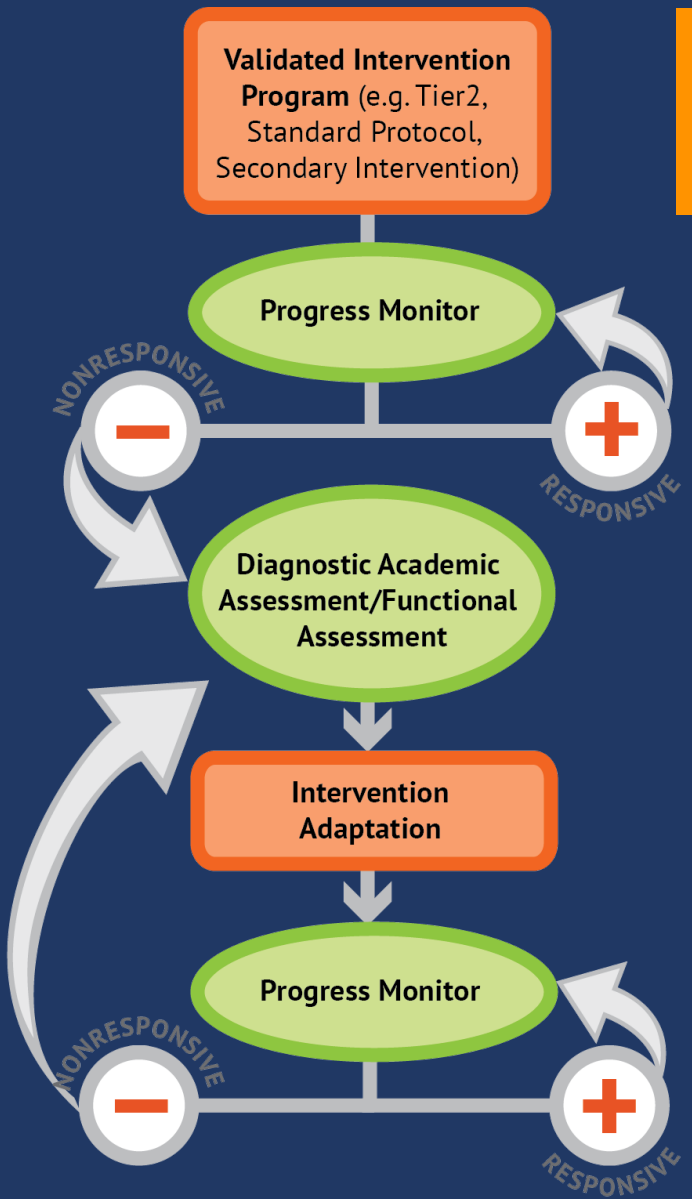
base | degrees | cube | plane | arc

Symbolic terms

plus | zero | twelve | dollars | and

General terms

above | measure | answer | longest | outside



Instructional Platform

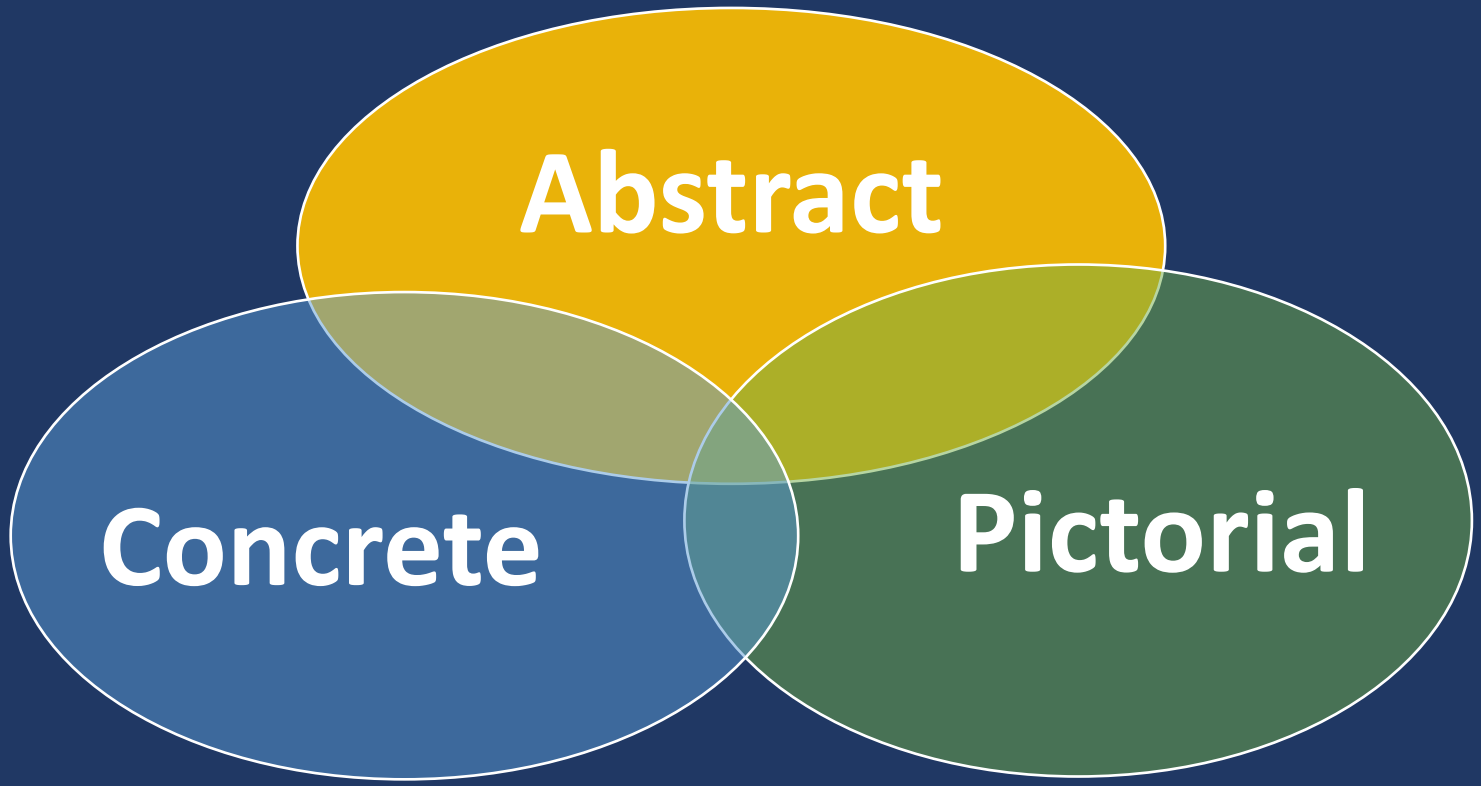
INSTRUCTIONAL DELIVERY

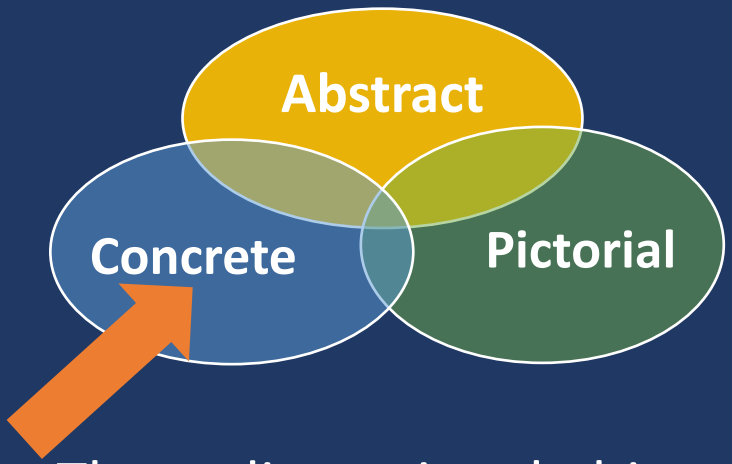
Explicit instruction

Precise language

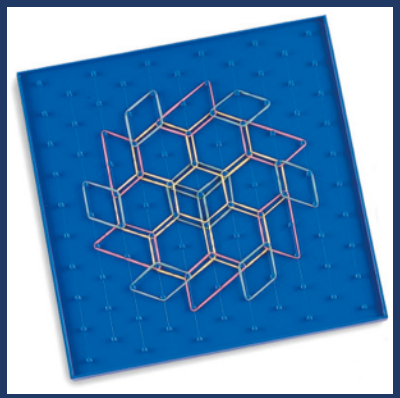
Multiple representations

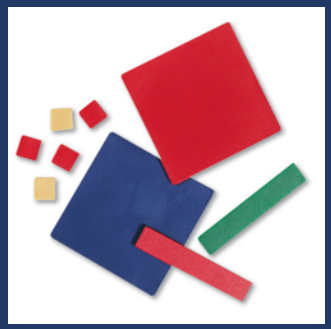
INSTRUCTIONAL STRATEGIES

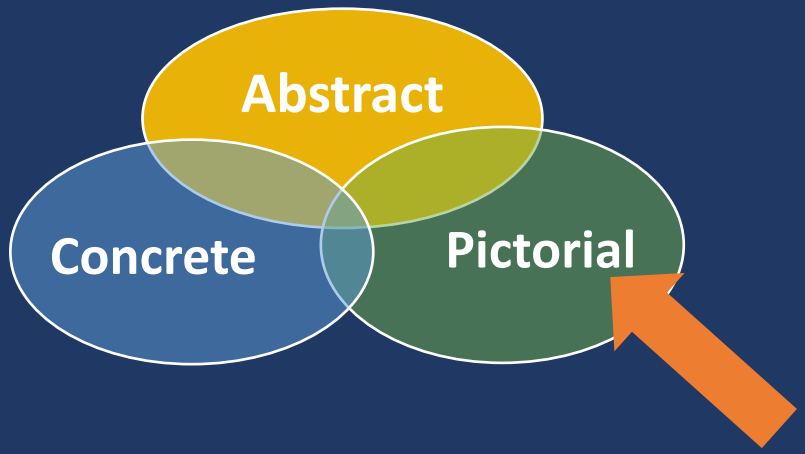


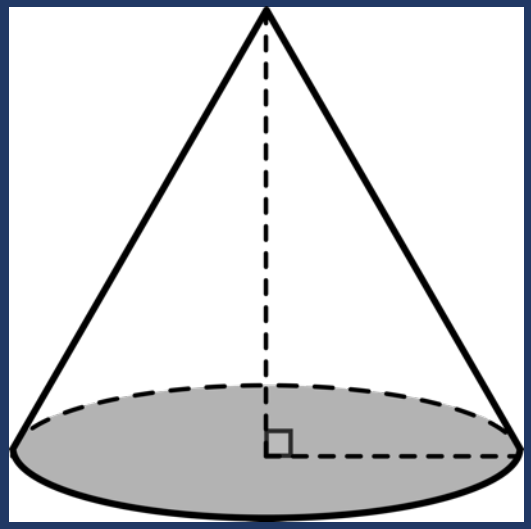


Three-dimensional objects

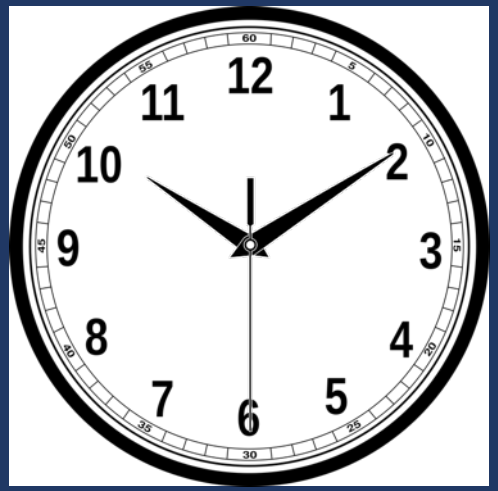


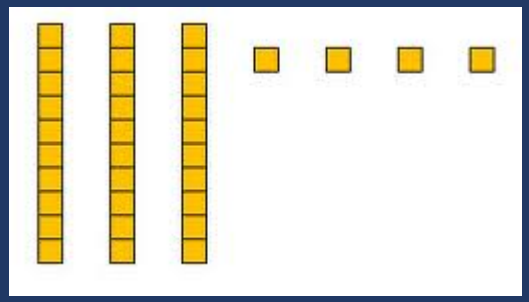


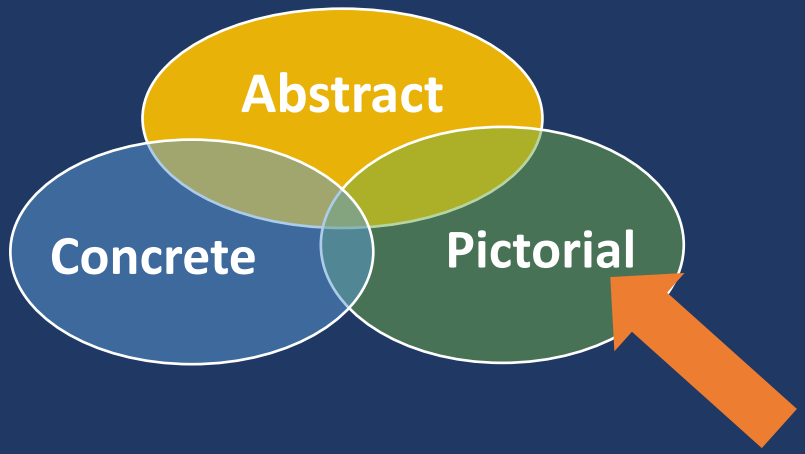




Two-dimensional images







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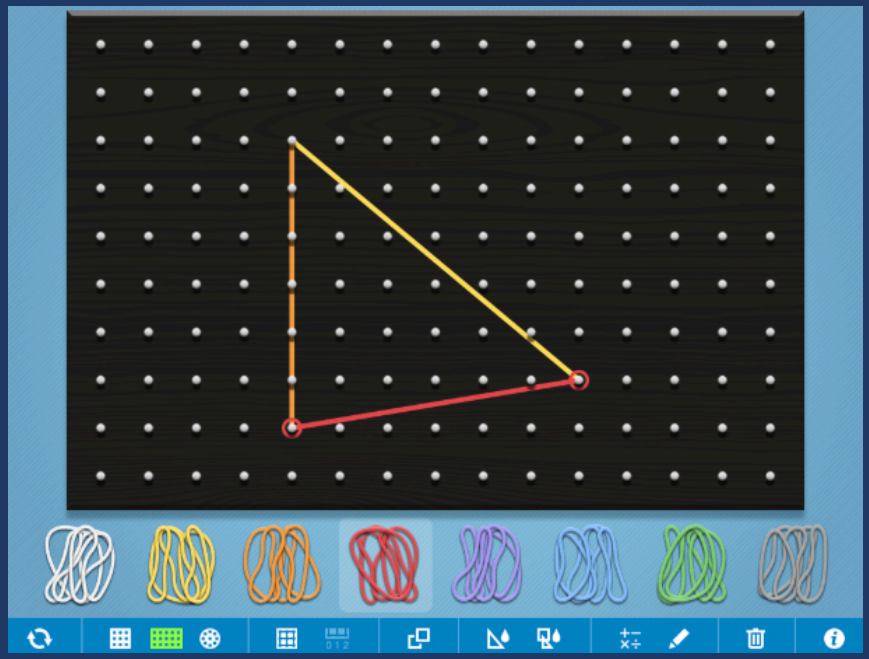
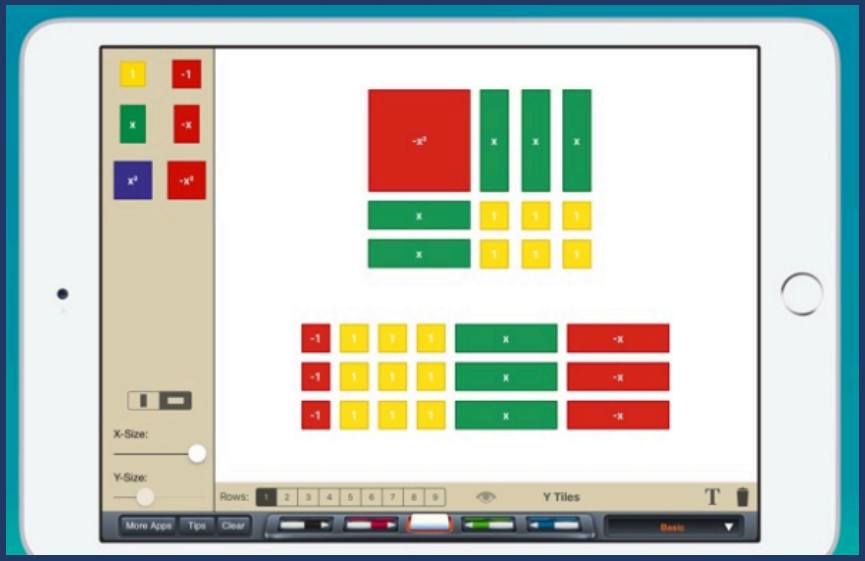
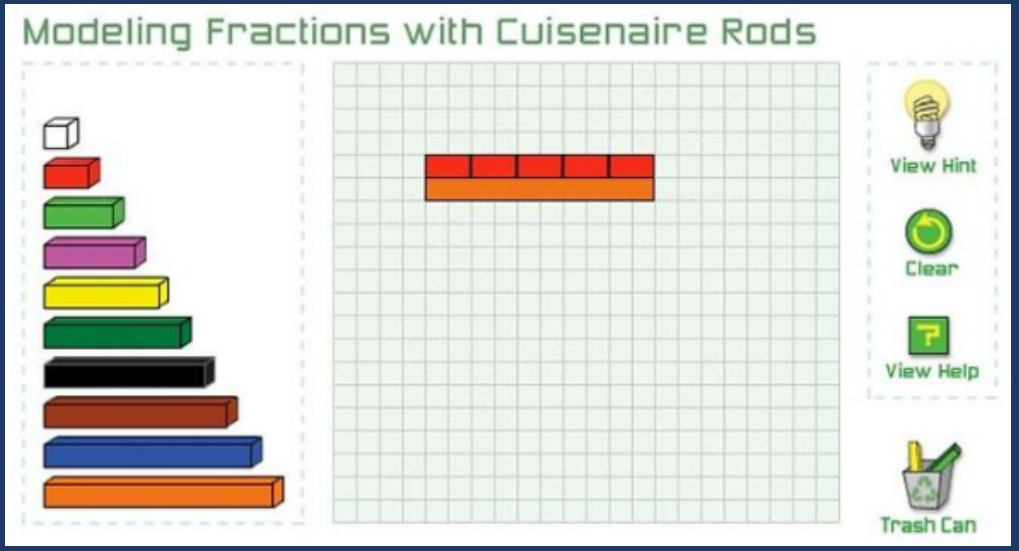
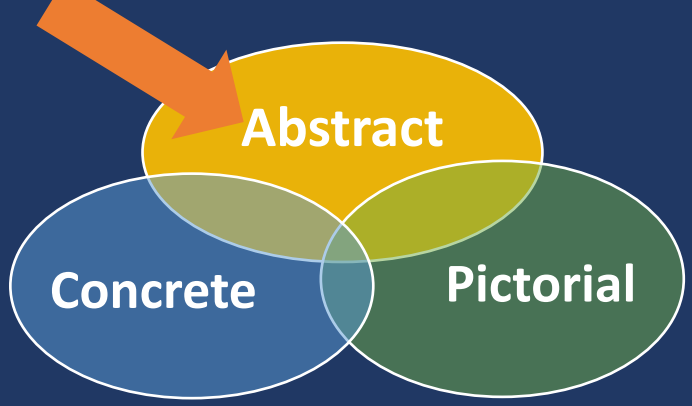








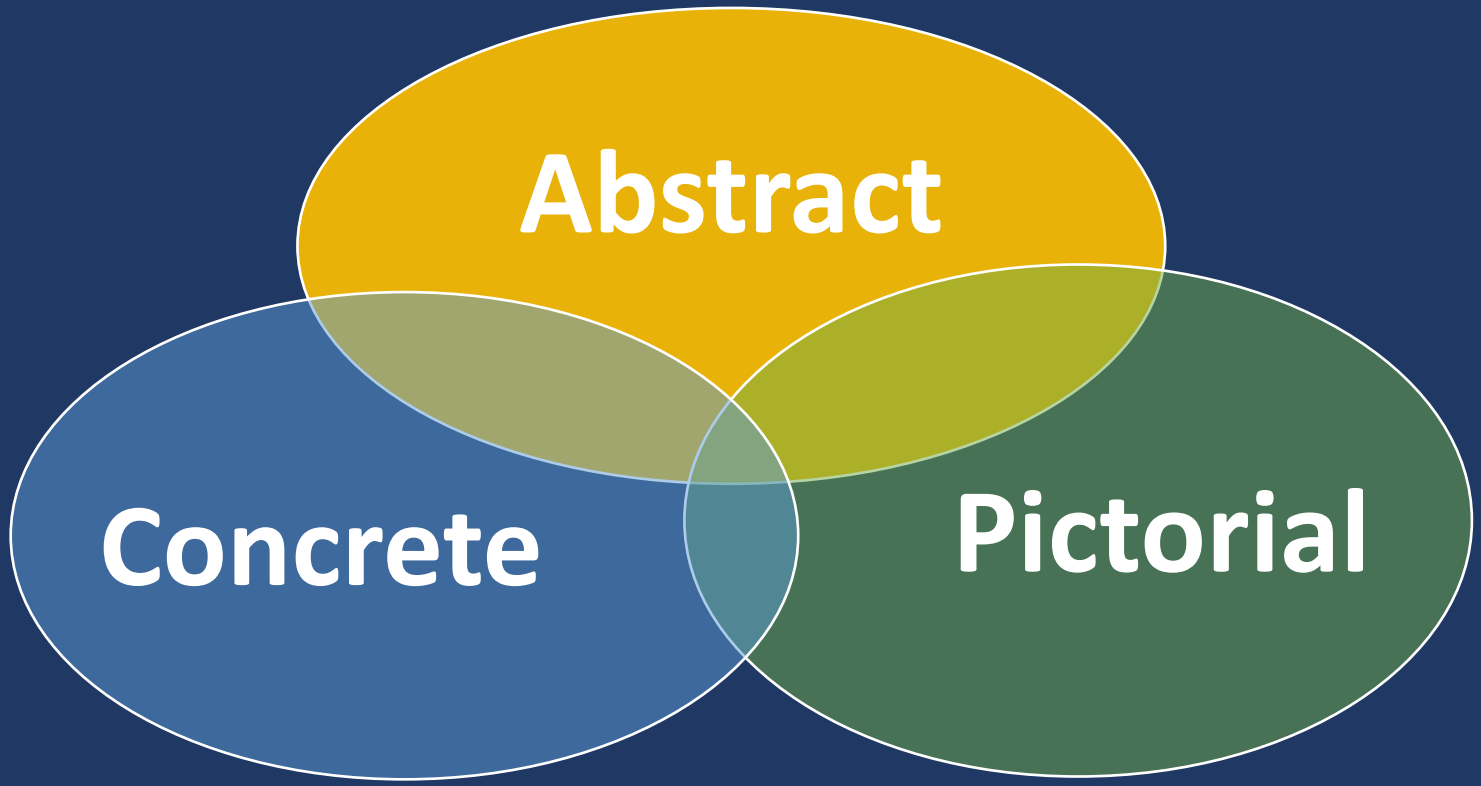
Numerals and symbols and words

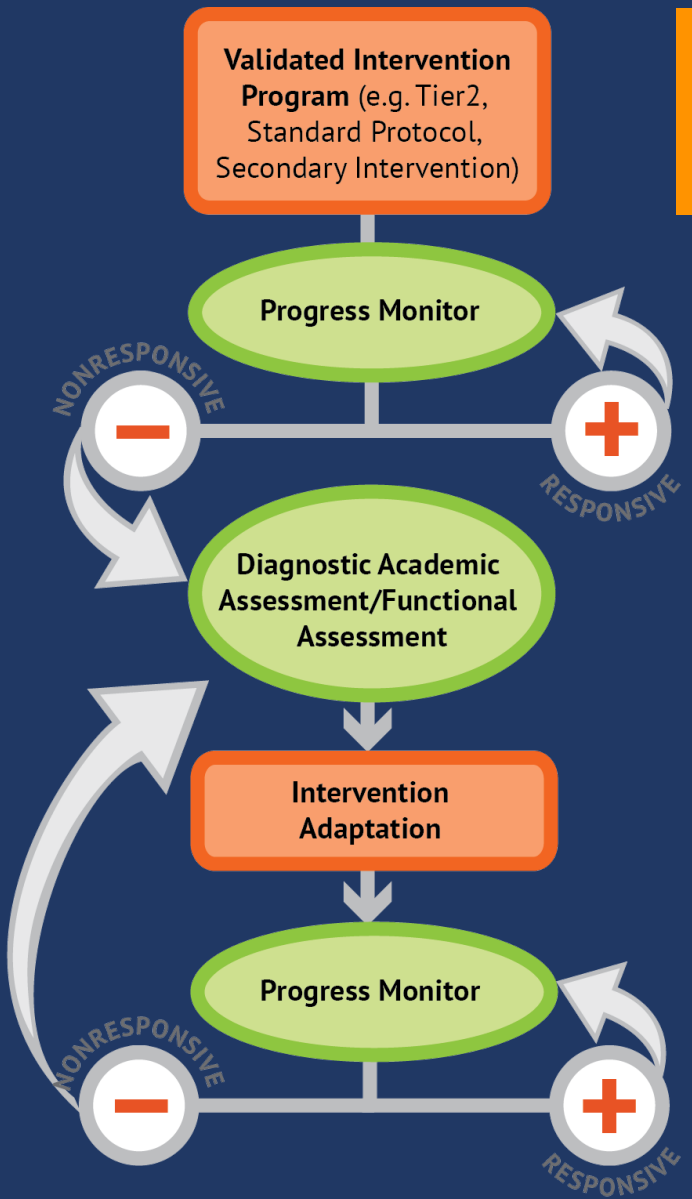
$2 + 8 = 10$

$34 = 3$ tens and 4 ones

$x - 6 = 8$

$$\begin{array}{r} 4{,}179 \\ +\ \ 569 \\ \hline \end{array}$$





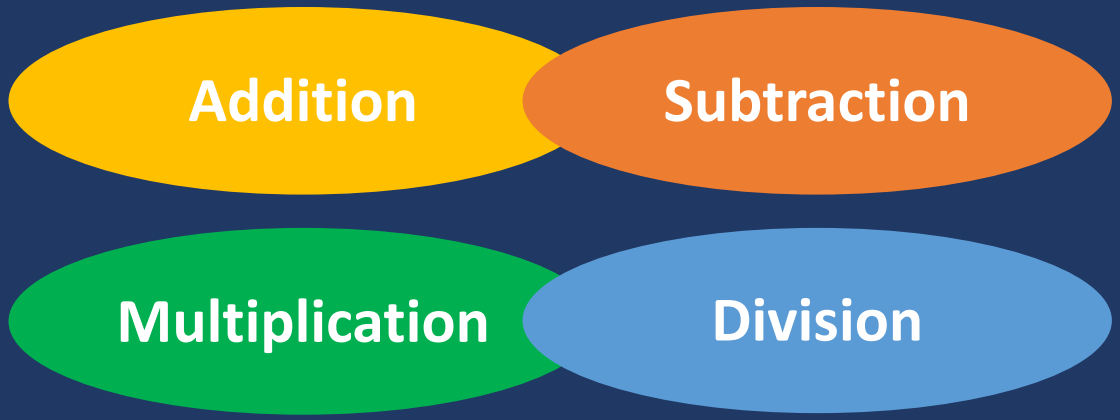
Instructional Platform

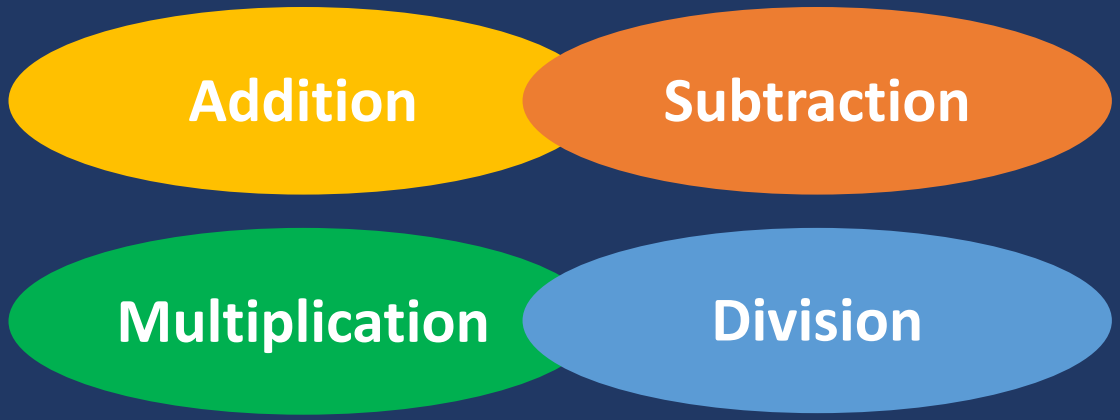
INSTRUCTIONAL DELIVERY

- Explicit instruction
- Precise language
- Multiple representations

INSTRUCTIONAL STRATEGIES

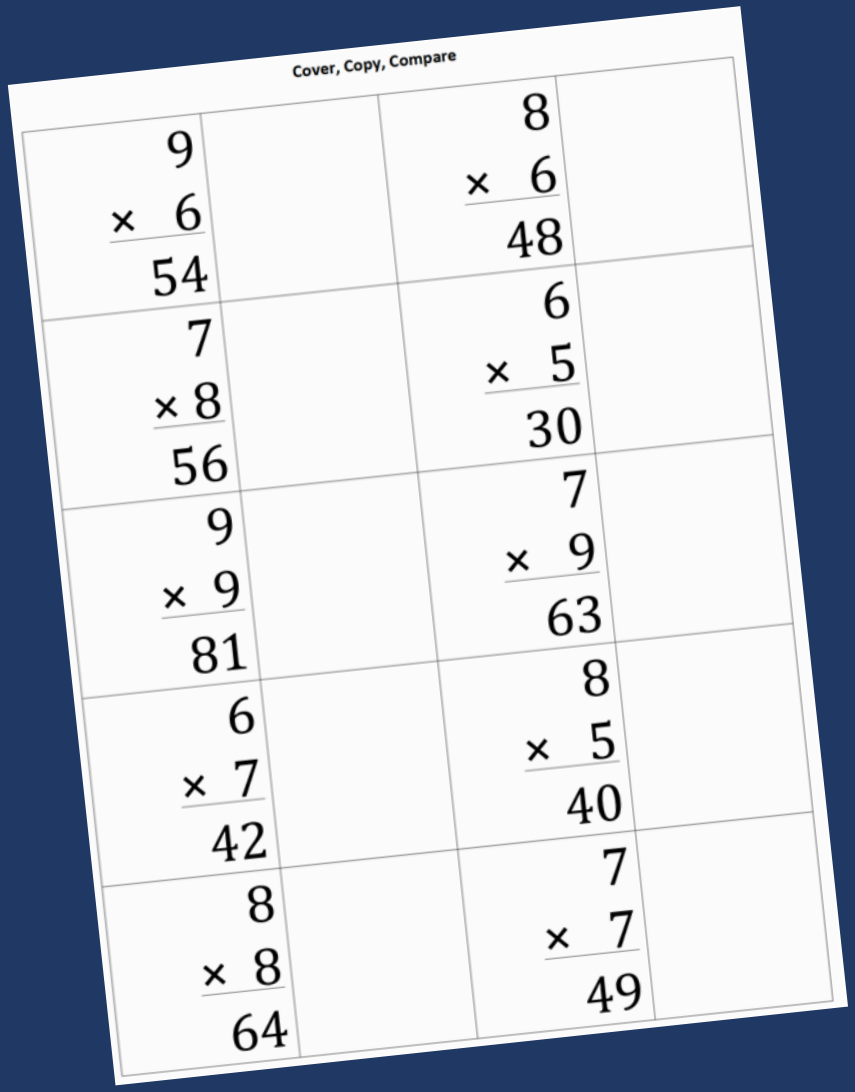
- Fluency building

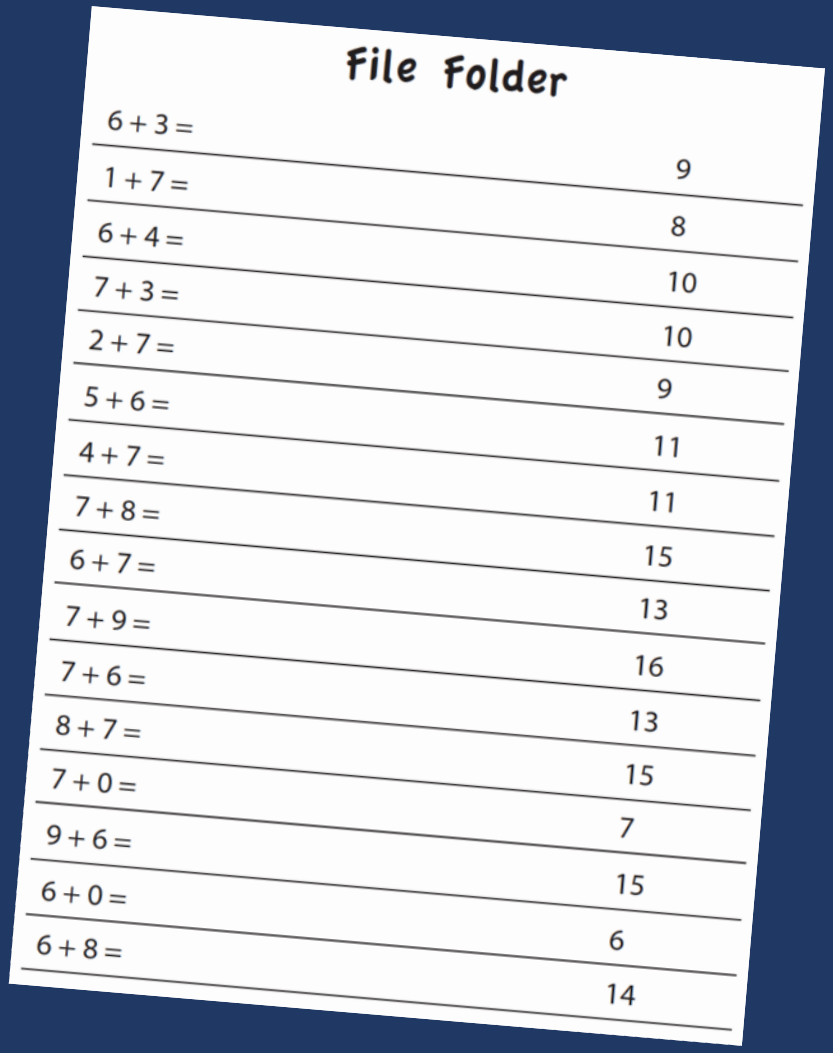


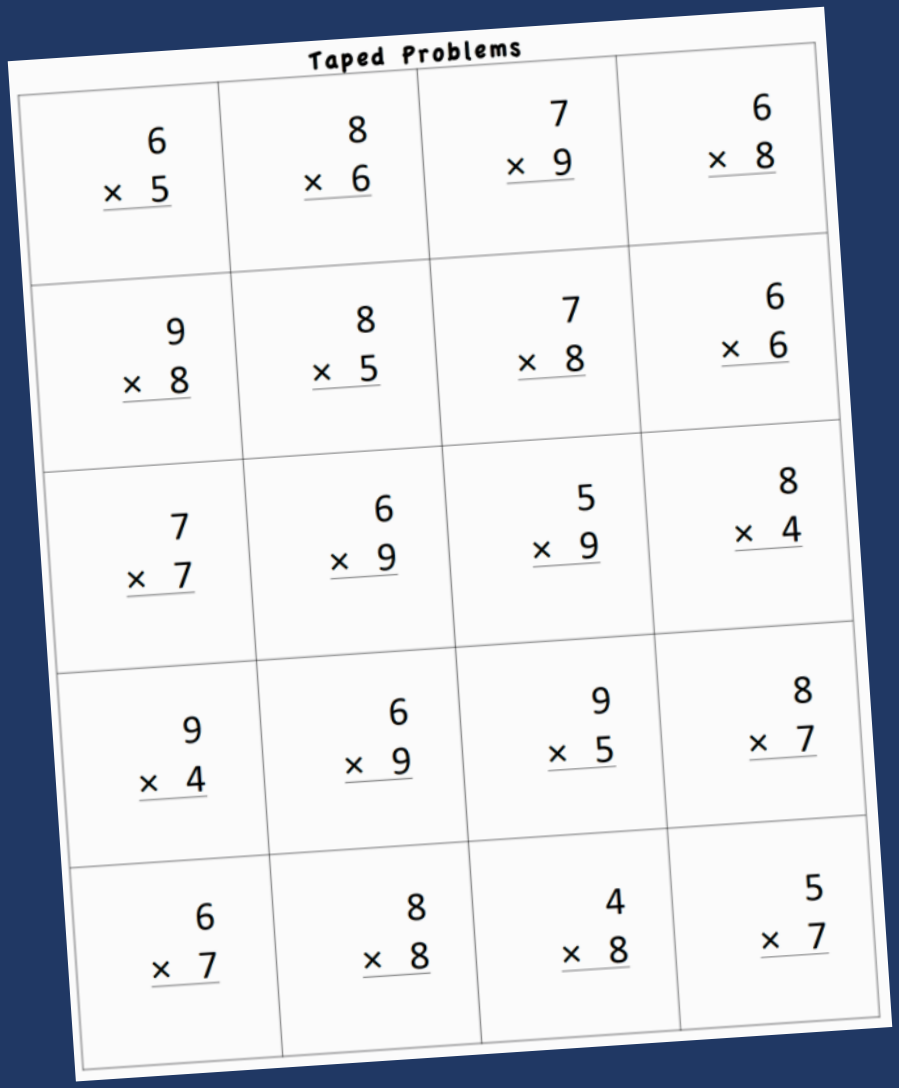


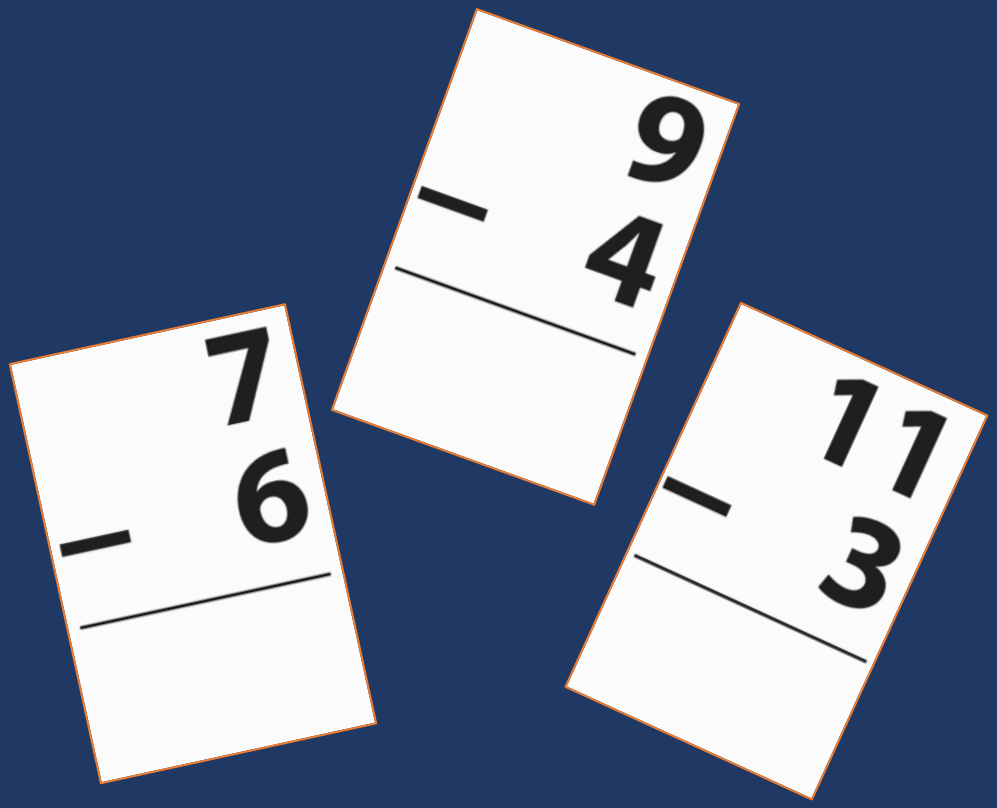
BRIEF
(1-2 min)

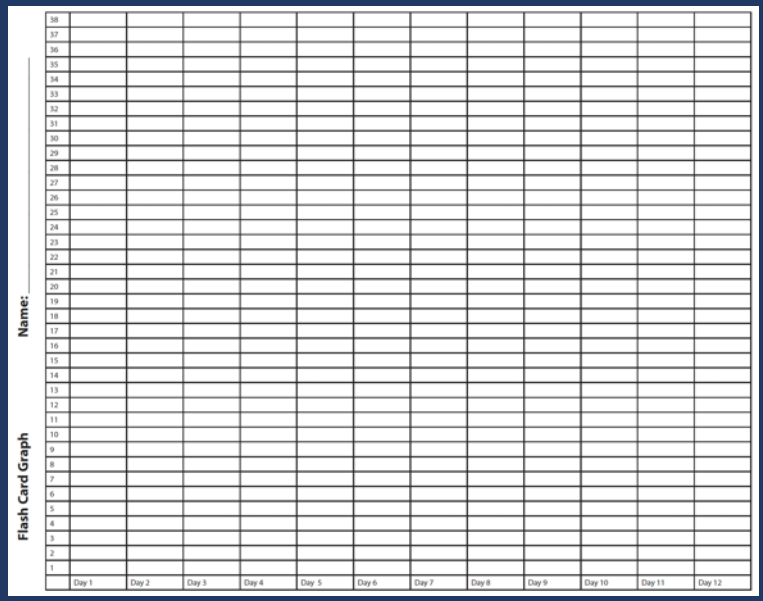
DAILY
(everyday)











		(place sum or product from baggie here)

5

4

12

8

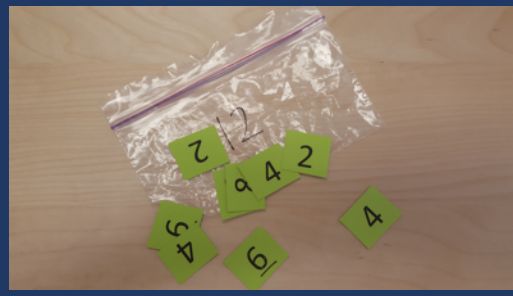
6

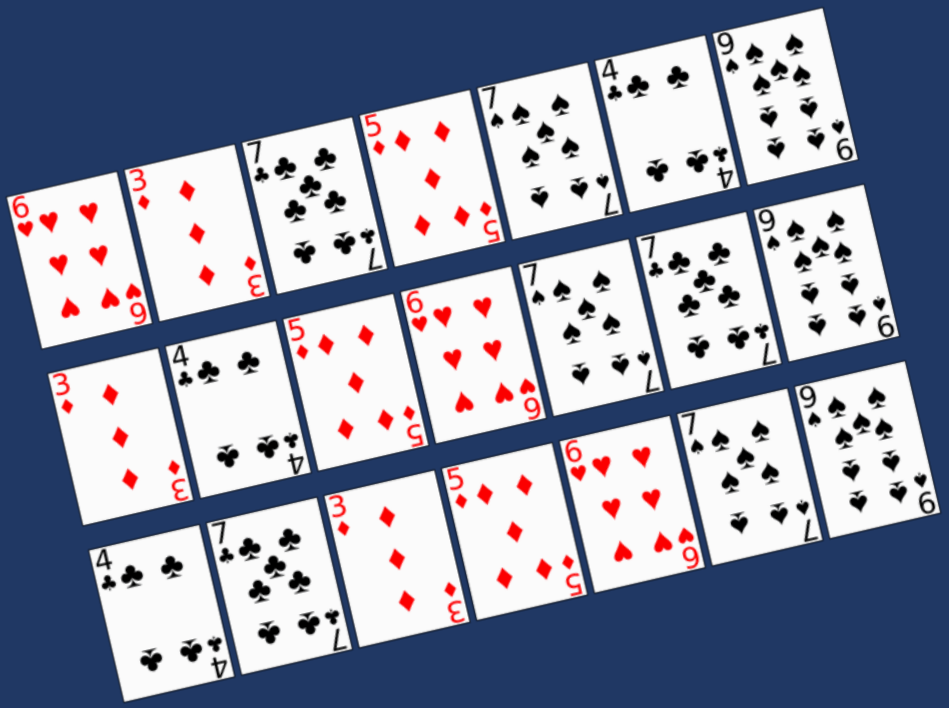
1

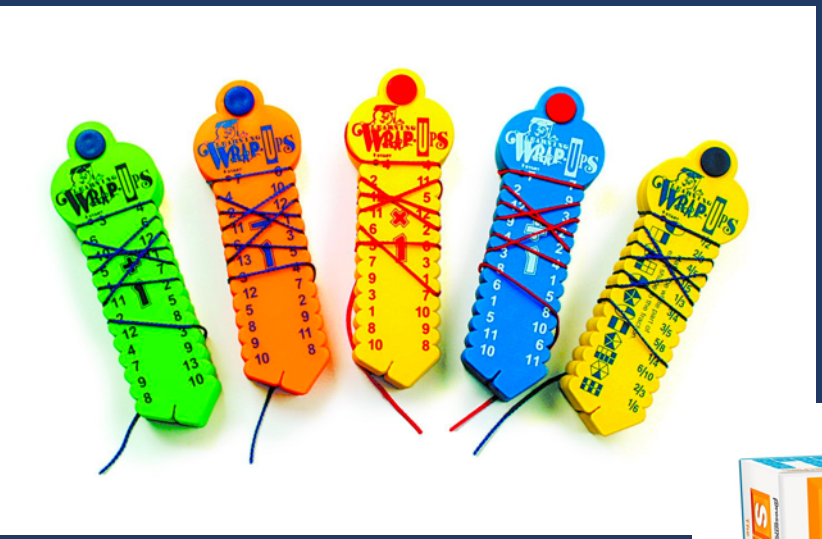
3

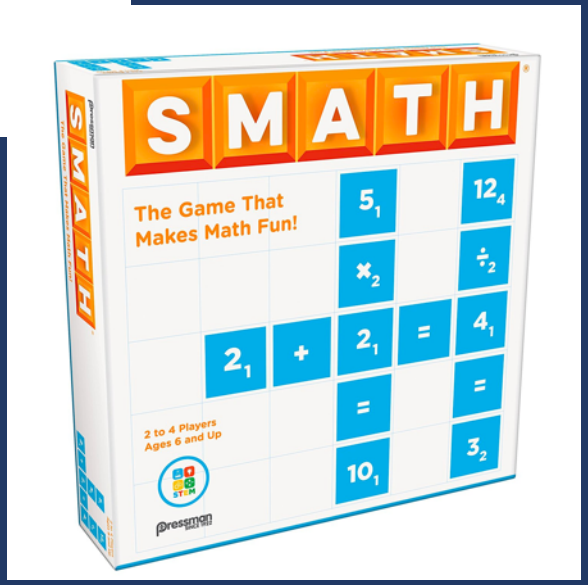
3

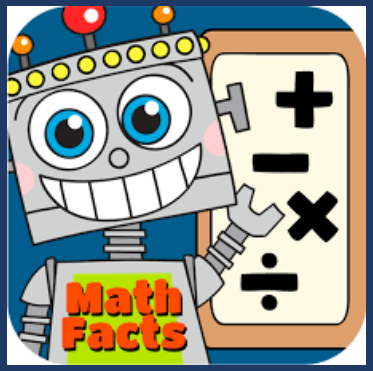
6

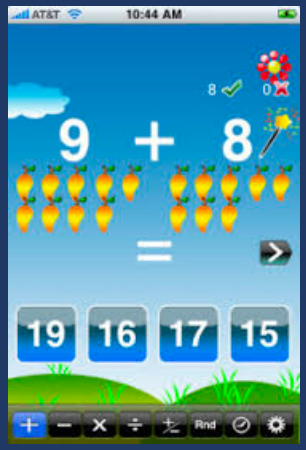


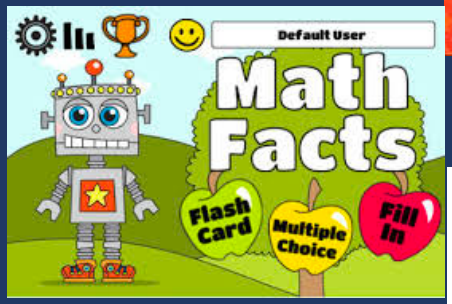


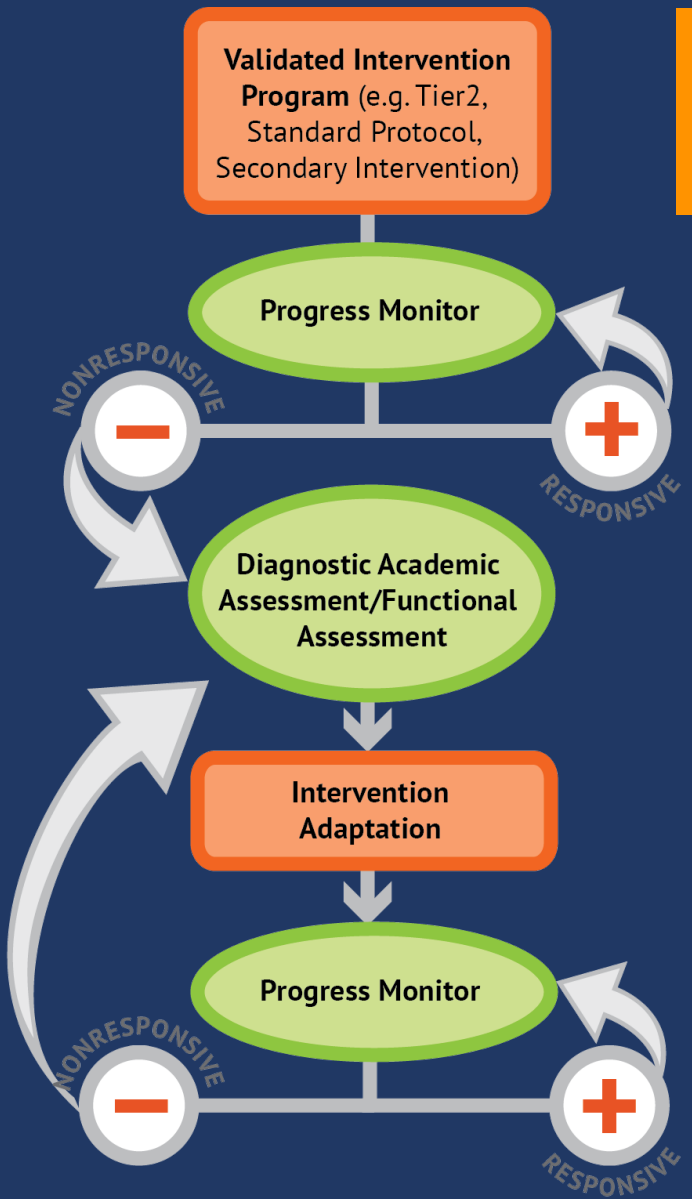












Instructional Platform

INSTRUCTIONAL DELIVERY

- Explicit instruction
- Precise language
- Multiple representations

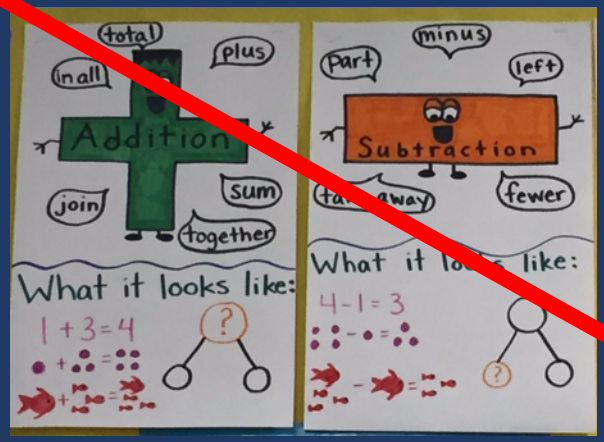
INSTRUCTIONAL STRATEGIES

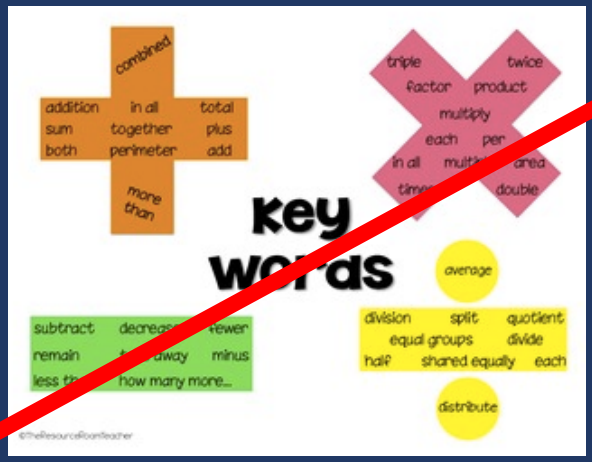
- Fluency building
- Problem solving instruction

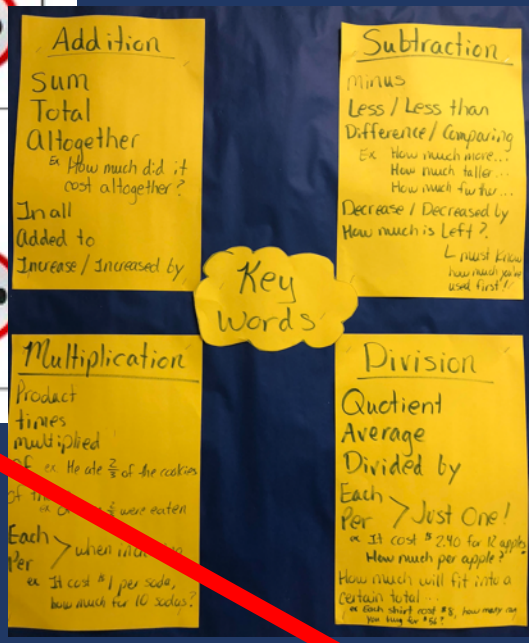
Don’t tie key words to operations

Do have an attack strategy

Do teach word-problem schemas







Word Problems: Subtraction

Name_____ Date_____

Subtraction

Read each problem. Write a number sentence and solve.

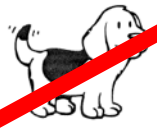
1. Mrs. Smith has 33 poodles and 18 boxers. How many more poodles does Mrs. Smith have?

_____

2. The kennel holds 91 dogs. Mr. Glass has 67 dogs in the kennel now. How many spaces does he have left?

_____

3. Mr. Kelly has 44 beagles. 26 of them are puppies. How many adult beagles does Mr. Kelly have?



_____

4. M[illegible]reen has 60 terriers. [illegible] of them are boys. How many terriers are girls?

_____

5. There were 58 kittens at the pet shop on Friday. 29 of them were sold on Saturday. How many kittens were left?

_____

6. Pat counted 22 lizards in the tank at the pet shop. 8 were sold later that day. How many lizards were left in the tank?

_____

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RIDGES

Read the problem.
I know statement.
Draw a picture.
Goal statement.
Equation development.
Solve the equatio

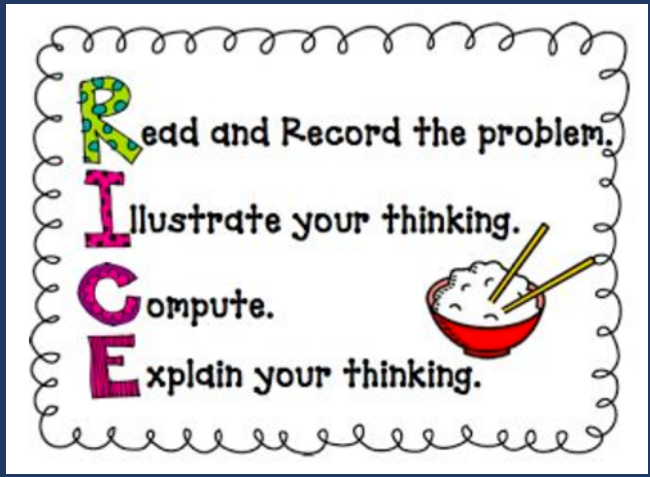
RIDE

Read the problem.

Identify the relevant information.

Determine the operation and unit for the answer.

Enter the correct numbers and calculate, then check the answer.



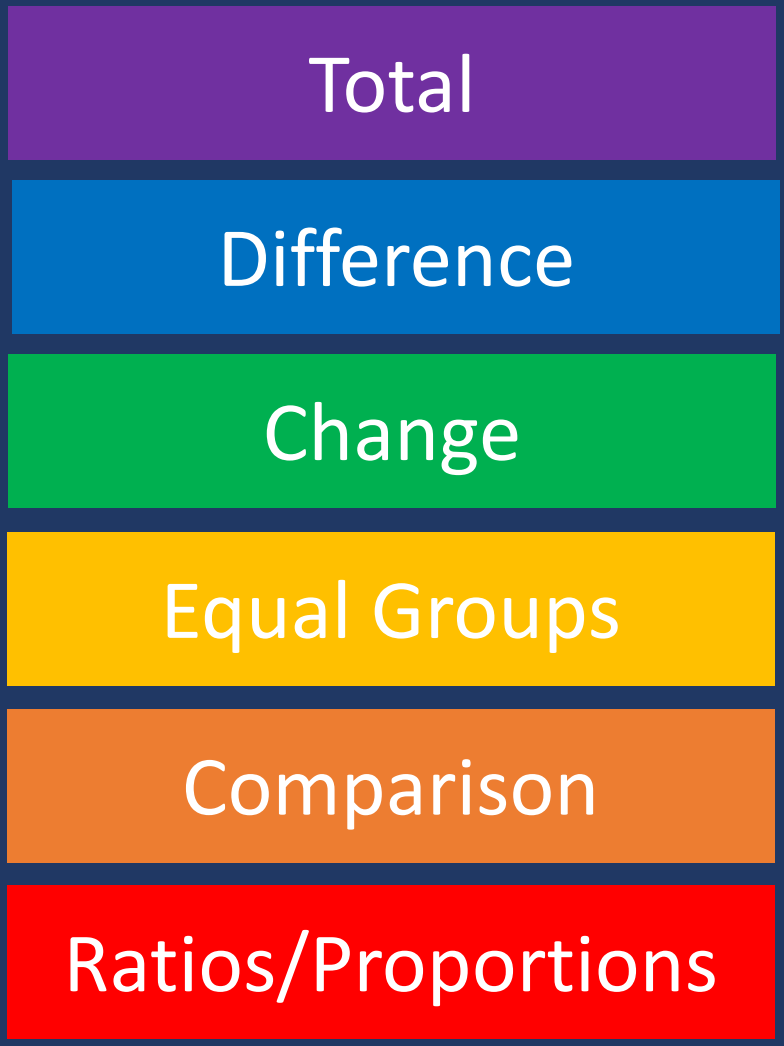
Attack Strategy

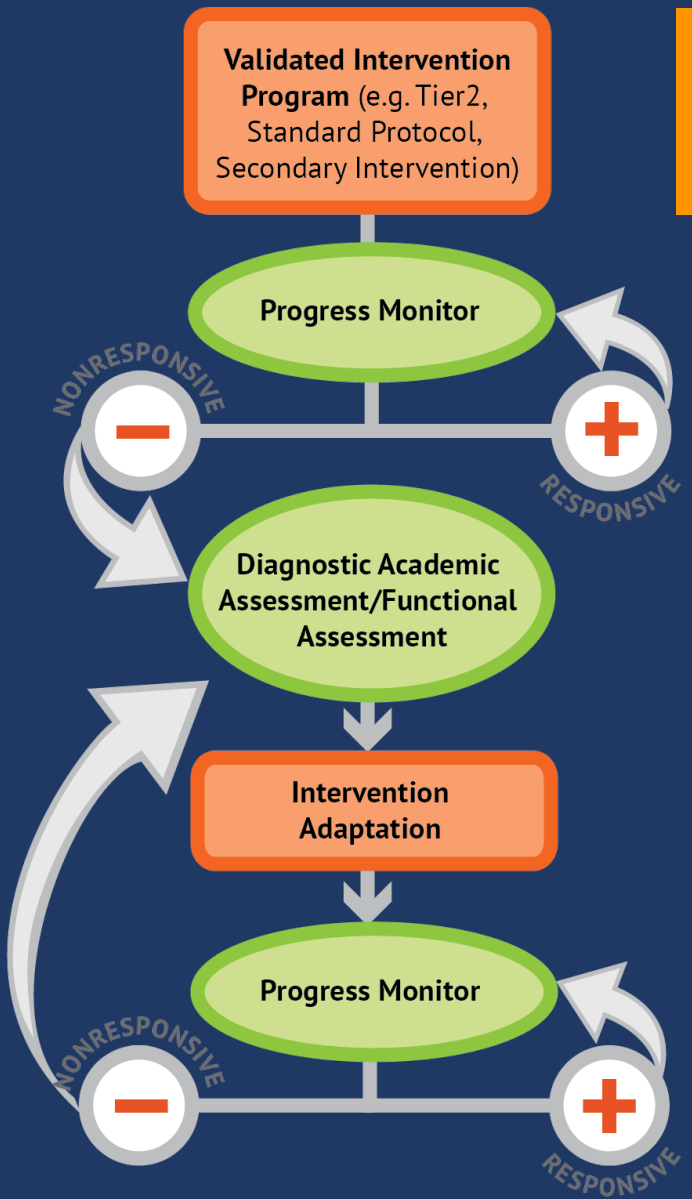
UPS✓

 Understand	Read the problem. Ask yourself: • What information do I know? • What is the question asking me to find?
 Plan	Choose a strategy, a tool or an approach.
 Solve	Show the math used to solve the problem.
 Check	Check your math. Ask yourself: • Did I answer the question asked? • Is my answer reasonable?

Boerne ISD

Schemas





Instructional Platform

INSTRUCTIONAL DELIVERY

- Explicit instruction
- Precise language
- Multiple representations

INSTRUCTIONAL STRATEGIES

- Fluency building
- Problem solving instruction

https://intensiveintervention.org/intensive-intervention-math-course

National Center on
INTENSIVE INTERVENTION
at American Institutes for Research

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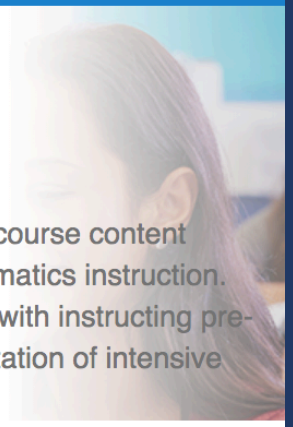

Intensive Intervention in Mathematics Course Content

NCII, through a collaboration with the University of Connecticut, developed a set of course content focused on developing educators' skills in designing and delivering intensive mathematics instruction. This content is designed to support faculty and professional development providers with instructing pre-service and in-service educators who are developing and/or refining their implementation of intensive mathematics intervention.

Intensive instruction was recently identified as a high-leverage practice in special education, and DBI is a research based approach to delivering intensive instruction across content areas (NCII, 2013). This course provides learners with an opportunity to extend their understanding of intensive instruction through in-depth exposure to DBI in mathematics, complete with exemplars from actual classroom teachers.

NCII, through a collaboration with the University of Connecticut and the National Center on Leadership in Intensive Intervention and with support from the CEEDAR Center, developed course content focused on enhancing educators' skills in intensive mathematics intervention. The course includes eight modules that can support faculty and professional development providers with instructing pre-service and in-service educators who are learning to implement intensive mathematics intervention through data-based individualization (DBI). The content in this course complements concepts covered in the Features of Explicit Instruction Course and so we suggest that users complete both courses.

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Evidence-based mathematics resources for educators

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