Essential Components of Math Interventions and SDI

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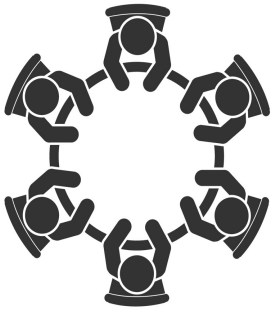


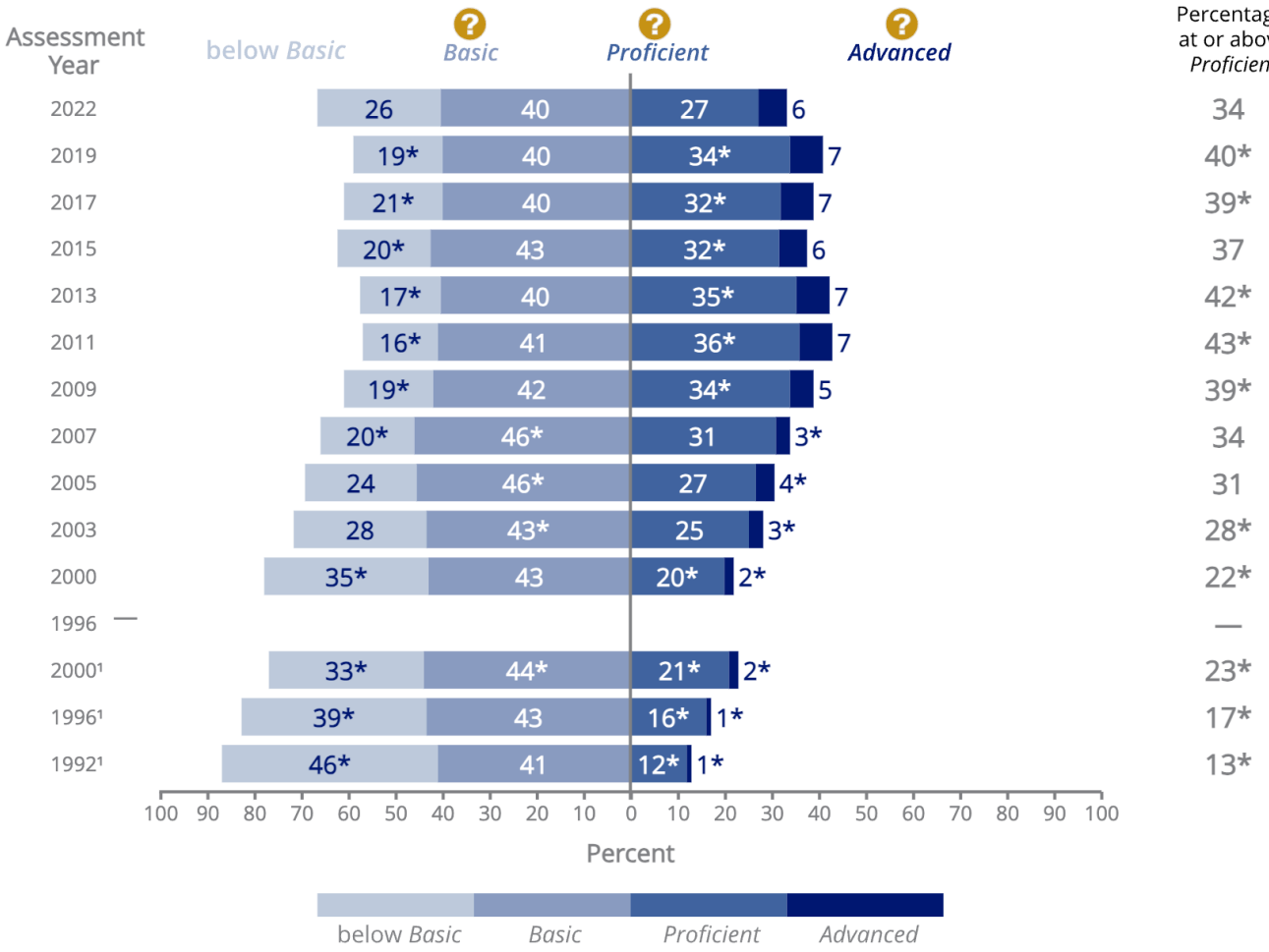
Describe your strengths in supporting mathematics.

Describe an opportunity for growth.

GRADE 4 | MATHEMATICS

Average scale scores, percentage , percentage , percentage , percentage and percentage for grade 4 mathematics, by All students jurisdiction: 1990, 1992, 1996, 2000, 2003, 2005, 2007, 2009, 2011, 2013, 2015, 2017, 2019, and 2022

SET BASELINE AT: ○ at or above *Basic* ◉ at or above *Proficient*



Instructional Platform

Essential Components of Math Interventions and SDI

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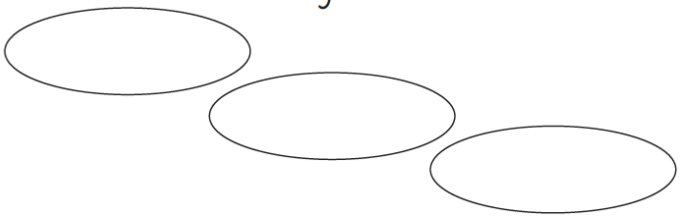
Instructional Platform

Instructional Delivery



Instructional Strategies

evidence-based practice

A practice that has shown **consistent and positive** results

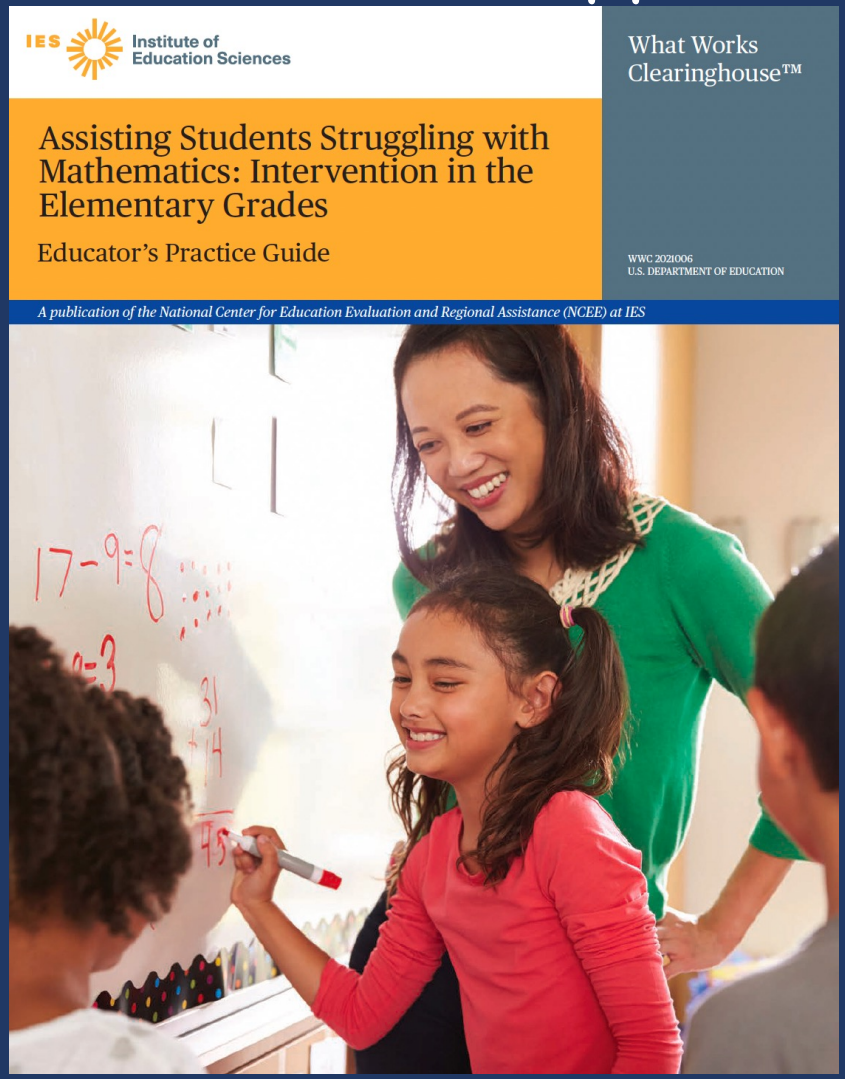
evidence-based practice

evidence-based intervention

An intervention (i.e., packaged program) that has shown **consistent and positive** results

A method or strategy that has shown **consistent and positive** results

What's the continuum of mathematics support?



Students require modeling and practice on how to use the language of mathematics.

Students should use hands-on tools, virtual manipulatives, drawings, and other visuals to understand mathematics concepts and procedures.

Teachers should use systematic and explicit instruction to help students develop a strong foundation for specific mathematics skills.

Teachers should use fluency building activities to build counting fluency and fluency with the operations.

Students should learn how to set up and solve word problems by combining an attack strategy with a focus on word-problem schemas.

Instructional Platform

INSTRUCTIONAL DELIVERY

Vocabulary

Representations

Model and Practice

INSTRUCTIONAL STRATEGIES

Fluency

Word Problems

Vocabulary

Instructional Platform

INSTRUCTIONAL DELIVERY

Vocabulary

INSTRUCTIONAL STRATEGIES

VOCABULARY

Research and Information

Use Formal Mathematics Language

Instead of that...	Say this...

Significant correlation (r = .49) between mathematics vocabulary and mathematics performance. Mathematics vocabulary appears most important for word-problem performance (r = .58).

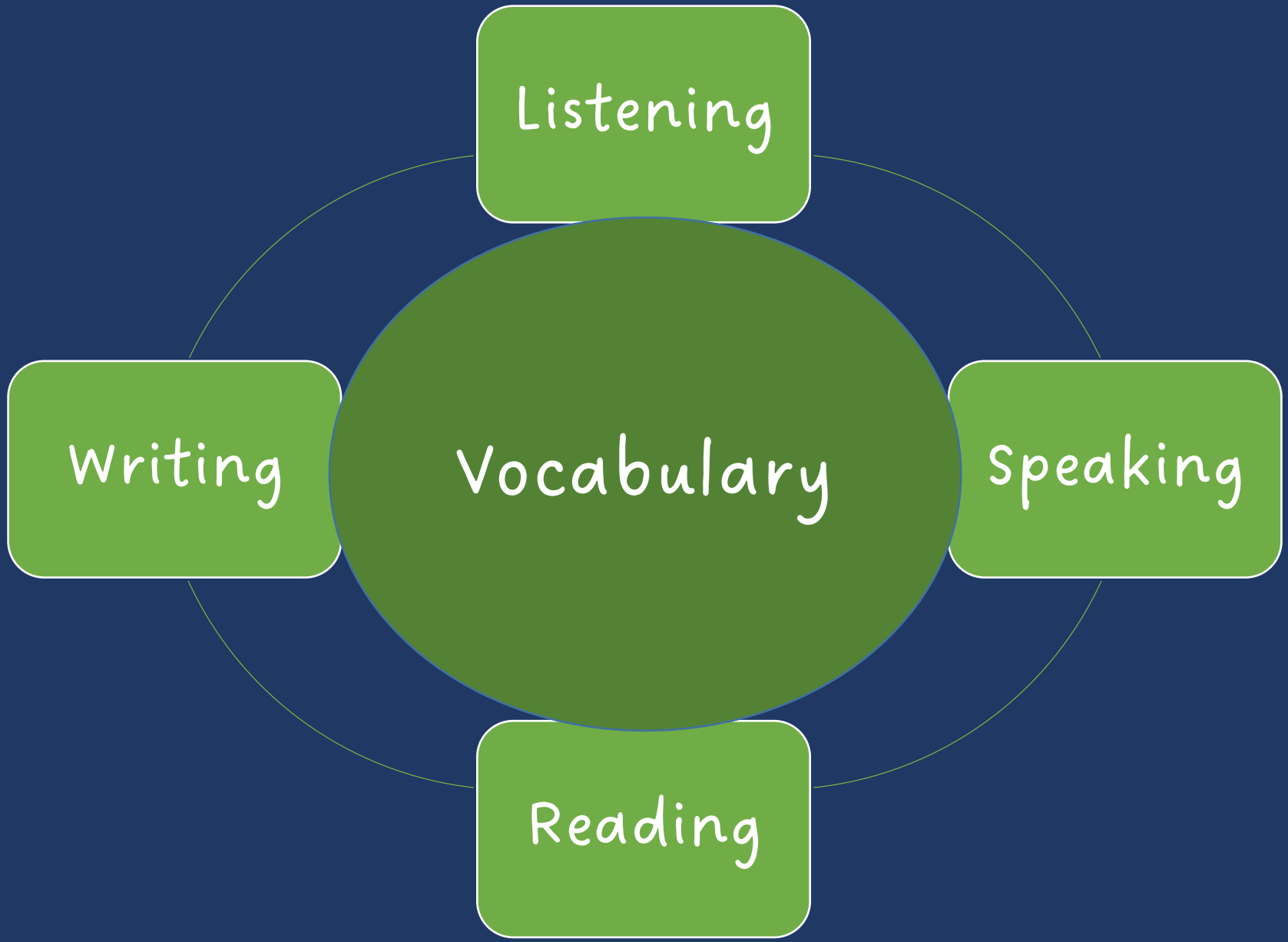
(Lin et al., 2021)

Early mathematics vocabulary related to mathematics and literacy.

(Hornburg et al., 2018; Purpura et al., 2017)

Students who experience difficulty with mathematics demonstrate lower mathematics vocabulary performance.

(Hughes et al., 2020; Powell & Nelson, 2017; Powell et al., 2017; Unal et al., 2021)



Use formal math language

Use terms precisely

What number is in the tens place?

What digit is in the tens place?
What is the value of the digit in the tens place?

135

Why this is important...

- A number refers to the entire amount.
- The 3 in the tens place value is not a number, but rather a digit in the number 135.
- Reinforces conceptual understanding of place value.
- Emphasizes that 3 is part of the number 135 with a value of 30.

The alligator eats the bigger number

is less than
OR
is greater than

Why this is important...

- Students must learn how to read and write the inequality symbols.
- Students must learn to read equations correctly from left to right because < and > are two distinct symbols.

$$\begin{array}{r} 167 \\ +\ 294 \\ \hline \end{array}$$

Why this is important...

- "Carry" or "borrow" is procedural.
- The other terms reinforce the conceptual understanding or regrouping ones into tens, tens into hundreds, and so on (i.e., the total amount does not change) *or* ungrouping hundreds into tens, tens into ones, and so on.

top number and bottom number

numerator and denominator

Why this is important...

- Identifying that there are two separate (whole) numbers suggests that whole number properties can be applied to fractions.
- Emphasizing that a fraction is ONE number with ONE magnitude on a number line that is communicated with a numerator and denominator is important.

reduce the fraction

rename OR
find equivalent OR
simplify

Why this is important...

- Reducing suggests that the quantity or magnitude of the new number will be less than the original number.

Four point seven
Four point oh seven

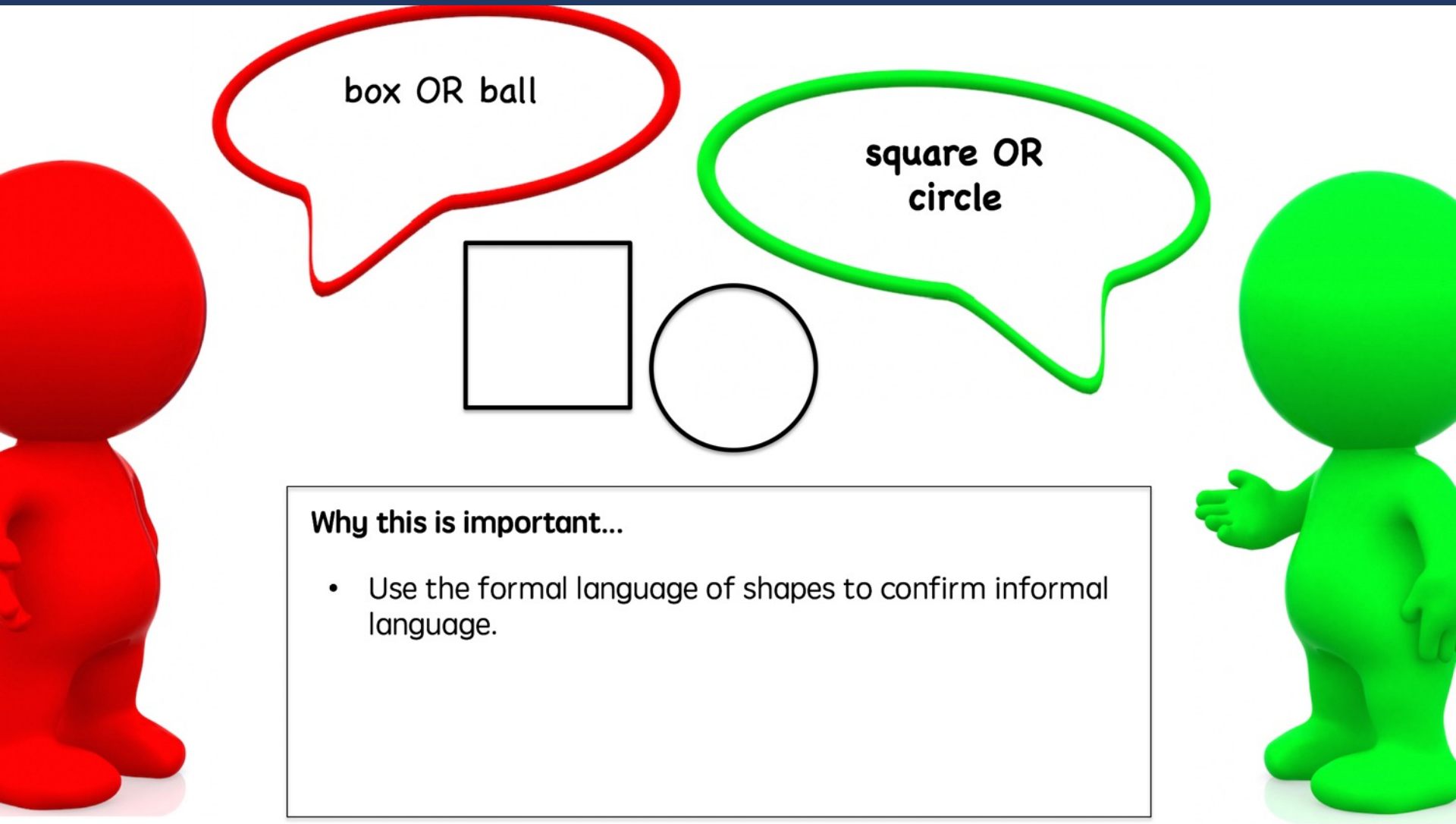
Four and seven tenths
Four and seven hundredths

4.7

4.07

Why this is important...

- Accurately shares the magnitude of the decimal.
- Emphasizes place value.

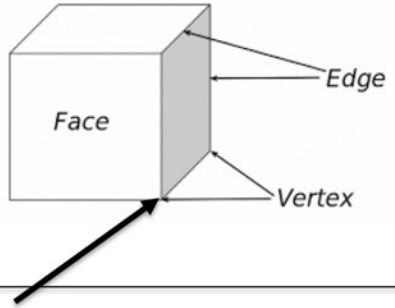


Why this is important...

- Use the formal language of shapes to confirm informal language.

point

vertex



Why this is important...

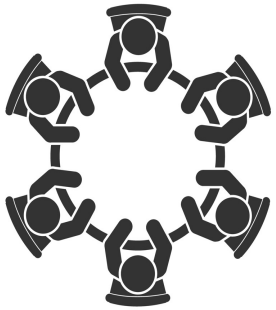
- This is the endpoint where two or more line segments or rays meet.

VOCABULARY

Research and Information

Use Formal Mathematics Language

Instead of that...	Say this...



Identify examples of "Instead of ____, say ____."

Use formal math language

Use terms precisely

VOCABULARY

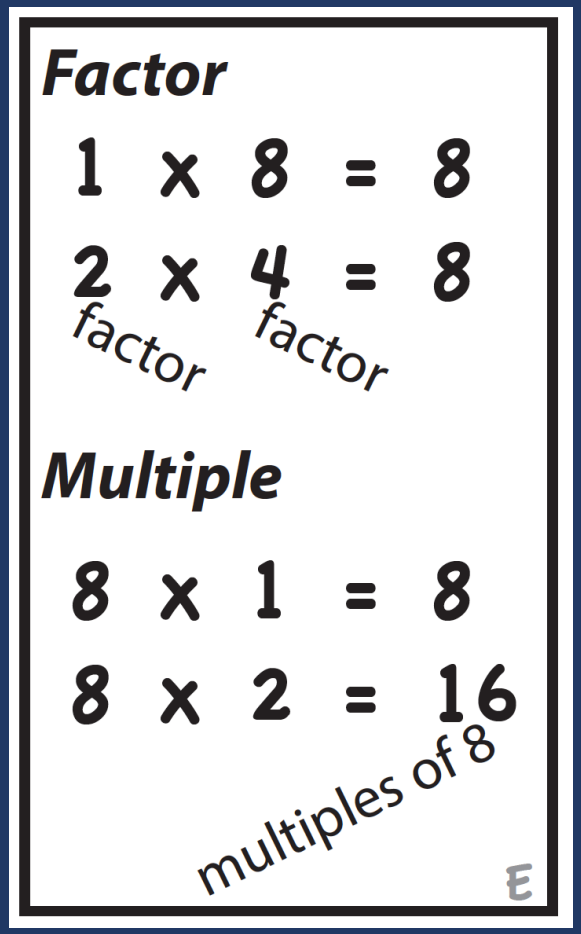
Use Terms With Precision

Strategies for Teaching Mathematics Language

What are your strengths?

What are your opportunities for growth?

What are your plans for next Monday?
Next month?
Next year?



Improper fraction

$$\frac{8}{5}$$

Proportion

$$\frac{2}{5} = \frac{8}{20}$$

Mixed number

$$1\frac{3}{5}$$

Ratio

4:3

Proper fraction

$$\frac{2}{9}$$

Unit fraction

$$\frac{1}{6}$$

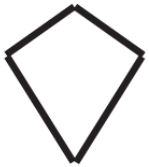
D

Equation	$9x - 4 = 7x$
Expression	$9x - 4$
Formula	$a^2 + b^2 = c^2$
Function	$f(x)$
Inequality	$9x - 4 > 6x$

C

Quadrilaterals

Kite



Rhombus

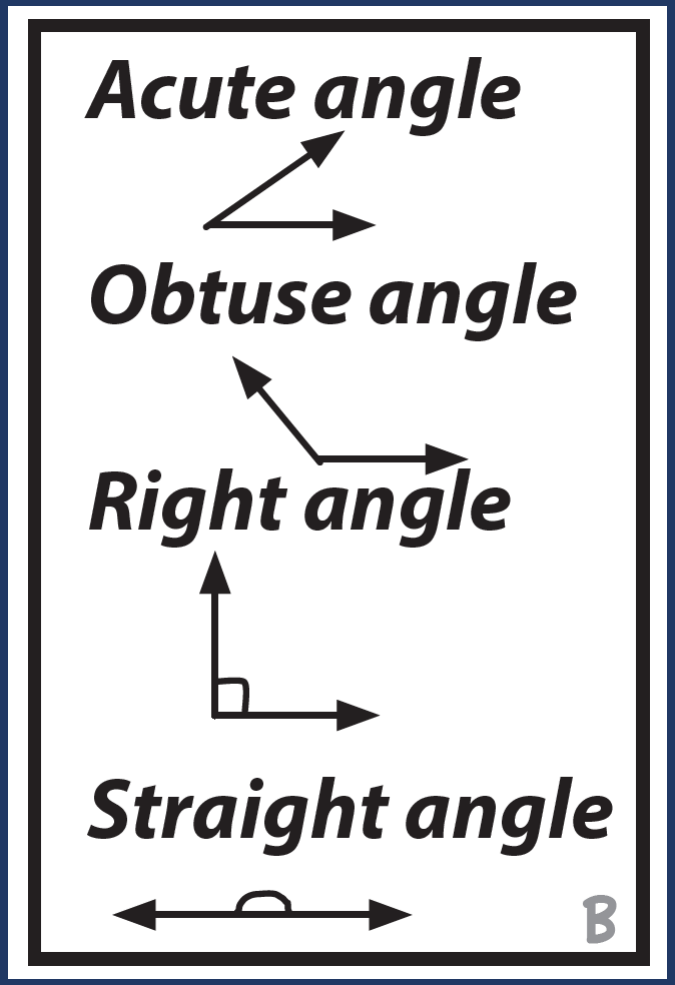
Parallelogram

Square

Rectangle

Trapezoid

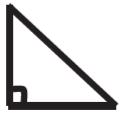
A



Acute triangle

Obtuse triangle

Right triangle



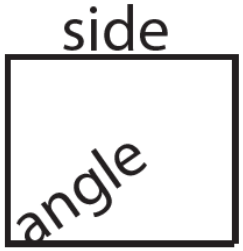
Equilateral triangle

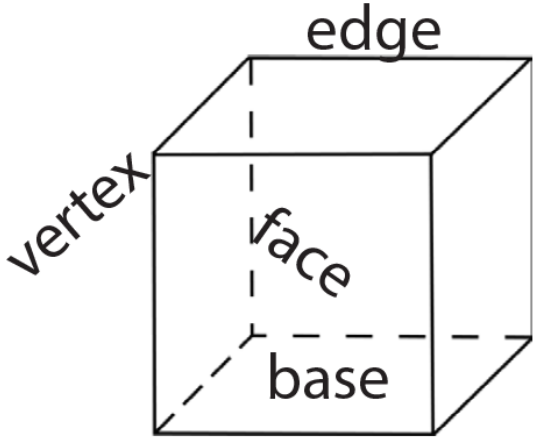
Isosceles triangle

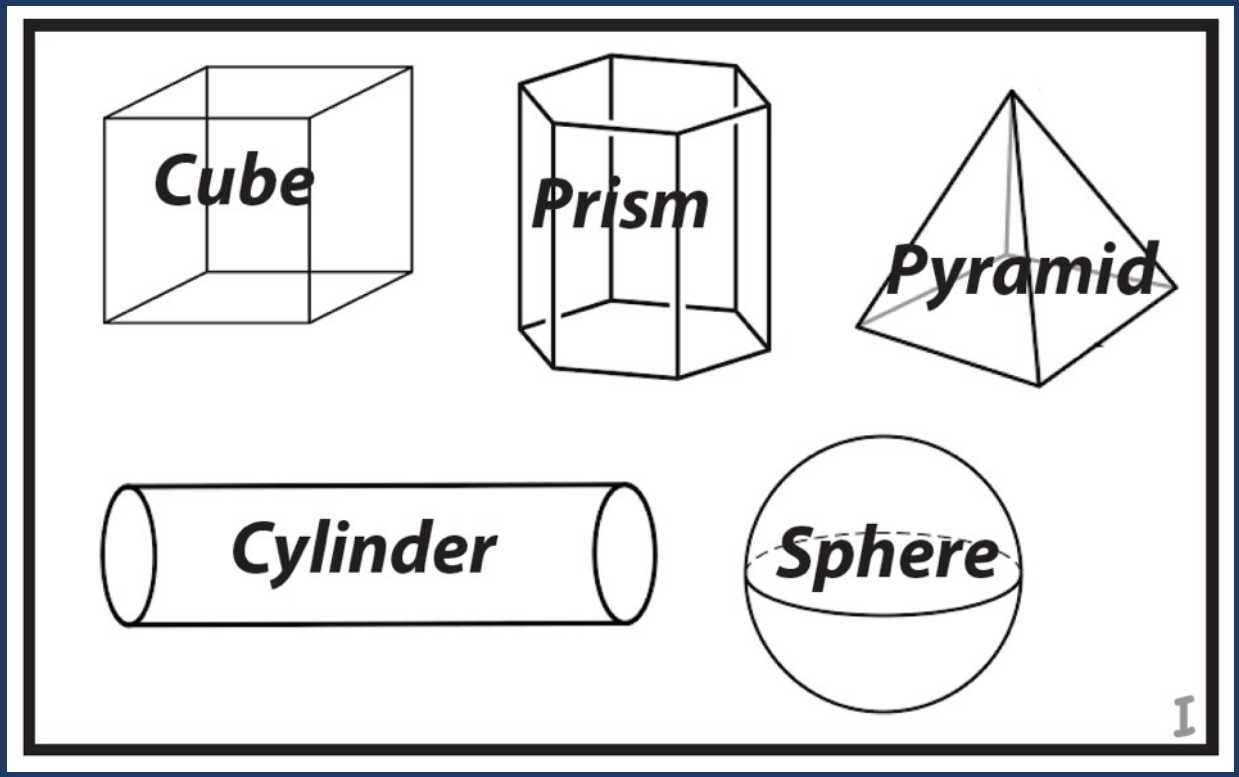
Scalene triangle

C

Angle
Base
Edge
Face
Side
Vertex







VOCABULARY

Use Terms With Precision

Strategies for Teaching Mathematics Language

What are your strengths?

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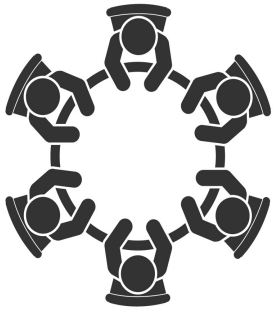


Discuss terms you want students to use with precision.

Use formal math language

Use terms precisely

VOCABULARY

Use Terms With Precision

Strategies for Teaching Mathematics Language

What are your strengths?

What are your opportunities for growth?

What are your plans for next Monday?
Next month?
Next year?

Use semantic maps

Term	Definition	Example	Nonexample
integer	(... -3, -2, -1, 0, 1, 2, 3...)	15	$\frac{1}{3}$
denominator	The equal parts of a whole or set.	$\frac{5}{8}$ 8 is the denominator 	$\frac{5}{8}$ 
numerator	The equal parts of a given fraction.	$\frac{5}{8}$ 5 is the numerator 	$\frac{5}{8}$ 

(Stevens et al., 2022)

Use word walls

difference

The result of subtracting or the result when comparing two numbers.

5 – 4 = 1

1 is the difference

horizontal line

A straight line that goes from left to right or right to left.

equivalent

Two numbers that have the same value.

$\frac{2}{4}$ **is equivalent to** $\frac{1}{2}$

total

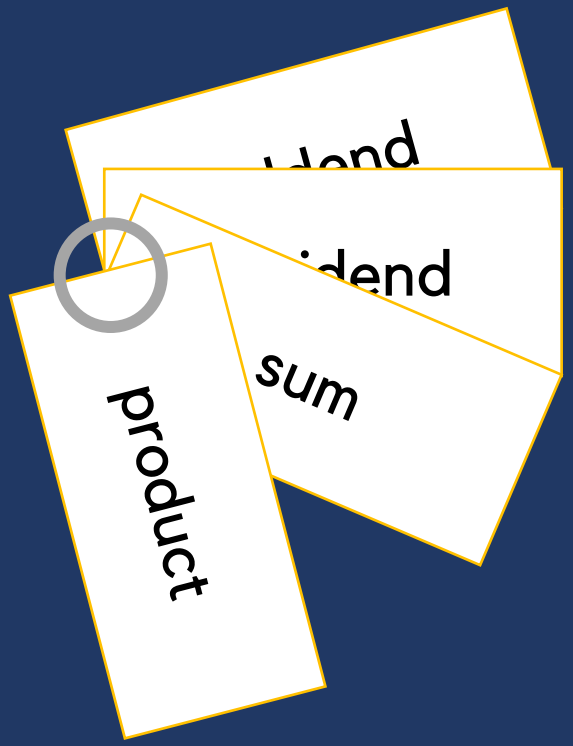
The result or sum when adding numbers.

5 + 7 = 12

(mathspiral.com)

Use flash cards

addend	quotient
divisor	dividend
factor	sum
product	difference

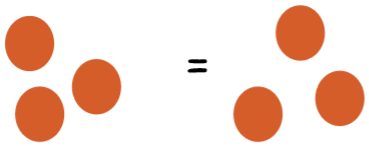


(Petersen-Brown et al., 2019)

Use glossaries

E

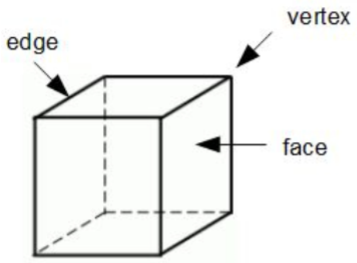
equal - with the same value



equation - expressions with an equal sign

$$5 = 2 + 3$$

edge - line segment between faces



Glosario de Matemáticas

Término	Definición
adición *(add)*	Juntar o agregar.
algoritmo *(algorithm)*	Es una serie de pasos organizados que describe el proceso que se debe seguir, para dar solución a un problema específico.
alinear *(array)*	Un conjunto de objetos, imágenes o números alineados en columnas y filas.
ancho *(width)*	La medida de un lado de un objeto, generalmente el lado más corto.
ángulo *(angle)*	Dos semirrectas o segmentos de línea recta que comparten un punto final.
ángulo agudo *(acute angle)*	Un ángulo que mide menos de 90°.
ángulo obtuso *(obtuse angle)*	Un ángulo que mide entre 90° y 180°.
ángulo recto *(right angle)*	Un ángulo que mide exactamente 90°.
área *(area)*	La cantidad de unidades cuadradas que cubre una figura geométrica cerrada.
balance presupuestario *(balance the budget)*	Un presupuesto es cuando la cantidad total de dinero gastado, ahorrado y compartido es igual al ingreso total.
báscula *(balance scale)*	Instrumento de medición que se utiliza para medir el peso o la carga.
base (computación) *(base (computation))*	Un número que se multiplica por un exponente.
base (geometría) *(base (geometry))*	La forma inferior de una figura tridimensional.

SPIRAL
Specialized Math Intervention to Reach All Learners

(mathspiral.com)

Use anchor charts

Addition Computation

1

17 ← addend

\+ 59 ← addend

76 ← sum

Quadrilaterals

Kite

Rhombus

Parallelogram

Square

Rectangle

Trapezoid

Use discussion

add
change
compare
decrease
difference
increase
part
put together
subtract
total

Use graphic organizers

horizontal

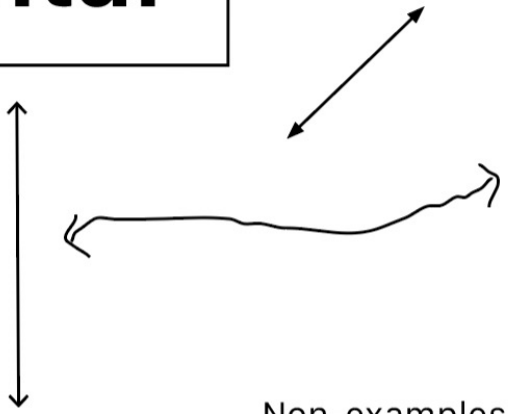
Definition

a straight line that goes left to right or right to left

Picture

Examples

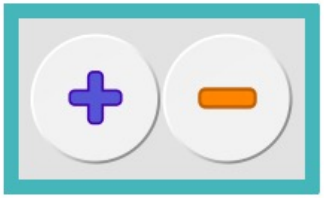
Non-examples



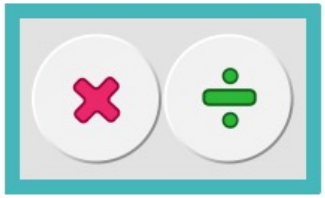
Use technology

Flocabulary by nearpod Lessons Mixes About Join a Class Log In Free Trial

Math



Addition & Subtraction



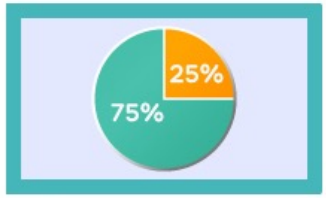
Multiplication & Division

Numbers & Operations

Expressions & Equations

Geometry & Measurement

Statistics & Probability



Ratios & Proportional Relationships

Use games

Name: _____ Date: _____

3RD GRADE MATH

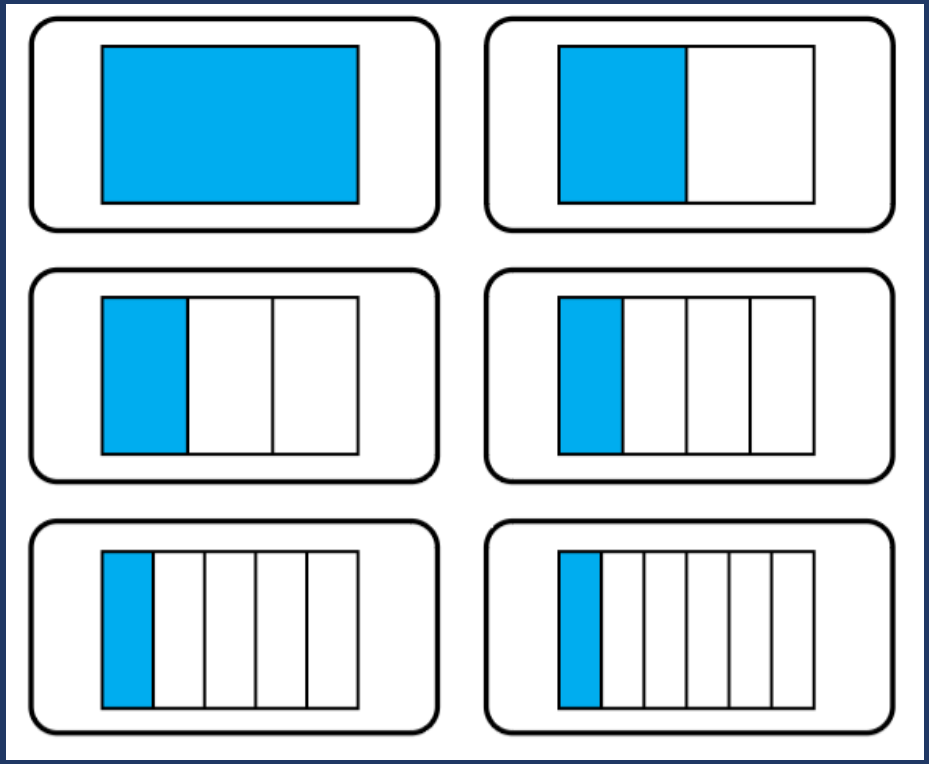
T W D H P T R I Y T S F T O Y T S P X G U C I C
M S G C E N T I M E T E R S Y S C Y Z D R G D J
I M I E U J R L H F O A W Z X U A L F J O Q F T
U P F N Z L R V C N N P Z D D H L P H F A V J Z
Y R U P M I A C O R D P I V J T E I H Y M F M S
E K X H R T T Y U J E S V X S V A T Z W M S E T
W Z Z W G E Q G M P C V C Z E H E L W L T T A A
N U V V B R J F H Y N E O Z H T K U K F A Z S W
Q Y J P S H A C D X A M Y G C U K M Z L J E U P
T Z W B P N R Z Y F L I Y D N A J J Z M W D R S
O W W U W T G I T I A T F F I S Q G X K K I E Z
E W R Q C S U U C U B J L E Z P B H G B C V M Q
F R A C T I O N S K Z O W M D X B M M C O I E C
N Z C A T L I J B J M U F O X X A D O Y L D N K
D E V P T U C M Y S A H K Z S U O W R S C V T G
M X N L N S O L V E R R I Y I B Z N Q O X C P W
M V W Z C D Q Z Z U G X L U K P Y O B S W I M N
K F L J U R J G J R O Q E M X C U O H N M S F D
S U B T R A C T G U L Y Y A K W U N U S O L H H
E G F D D A I O I A I Y R R J I C A P A C I T Y
I L W B A T R D O X K C J G H T D X E G C S M Z
X J Q Y A H L T B J R A I W J B C K I U S S I U
N U O D N R L V T I T L C U P C L W C B F S Z Q
J F N P R R K P Y M R E L U R Q H M A E Y Y Z H

ADD
BALANCED
CAPACITY
CENTIMETERS
CLOCK
DIVIDE
FRACTIONS
GRAM
INCHES
KILO GRAM
LITER
MEASUREMENT
MULTIPLY
NOON
RULER
SCALE
SOLVE
SUBTRACT
TIME

square	circle	decagon	triangular prism	cone
cylinder	cube	sphere	line	pyramid
parallelogram	octagon	FREE	trapezoid	oval
kite	pentagon	cylinder	rectangle	line segment
hexagon	rhombus	triangle	quadrilateral	rectangular prism

https://wordmint.com/public_puzzles/13055

Use games



one	one-half
one-third	one-fourth
one-fifth	one-sixth

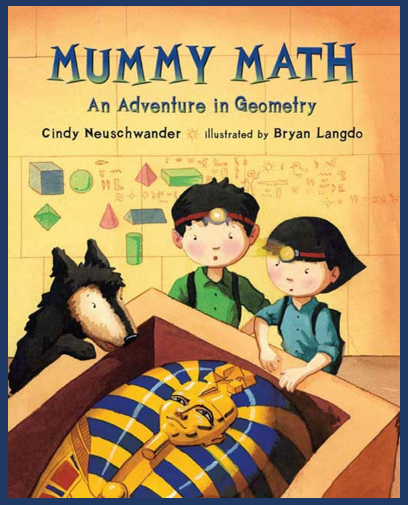
Use math writing

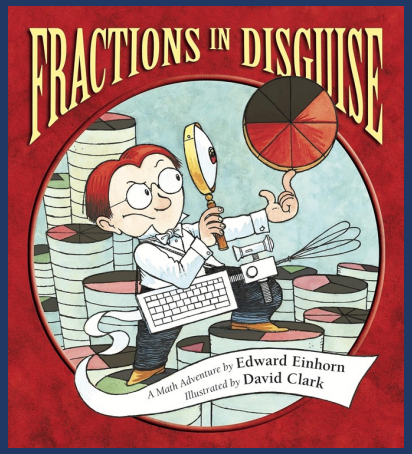
I would help Cole out by not putting them into thirds because he put 1 and 2/3 but the answers should be 3/5. So next I would draw the lines the make them into 5 pieces but put next to eachother. Then you shade in 3 of the squares and keep the others alone. then that would be the correct way to do 3/5.

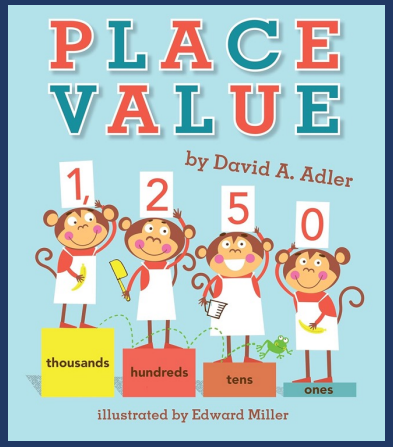
What Alex did wrong was that it was that he has five rectangles but they are different sizes so first what I would do is draw 5 rectangles side by side then what you would do is shade 3 of them and that would equal 3/5 so that would be the correct way to solve it.

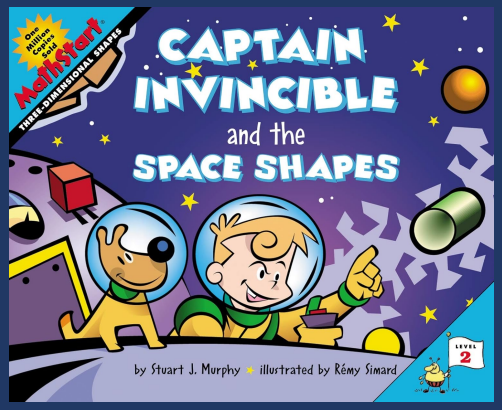
I would help Bo out by he shaded three rectangls which is corect but the he left 5 shaded and there should only be 2 blank rectangles so if you close 3 rectangles then then answer would be 3/5 and that is the correct way to solve it.

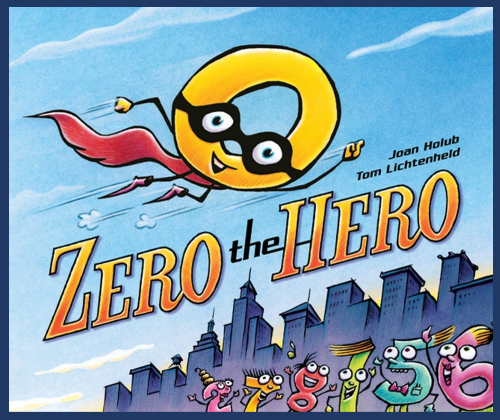
Use read-alouds

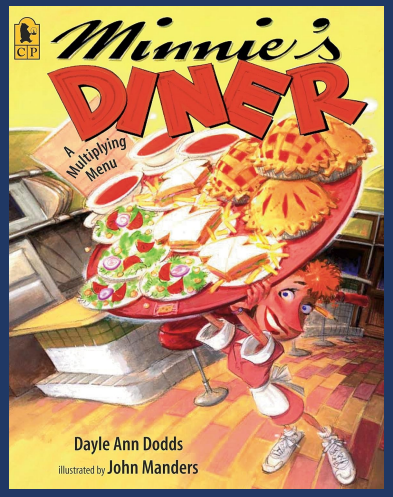












(Purpura et al., 2017)

Model and practice

Teacher	**Let's work on addition. Today, let's think about addition as combining. What does it mean to combine?**
Students	Put together.
Teacher	**When we combine, we put things together. When you cook, you put ingredients together. For example, to make macaroni and cheese, you combine what?**
Students	Macaroni noodles and cheese!
Teacher	**That's right. You combine macaroni and cheese! Now, let's think about combining numbers. Look at this problem.** (Show problem.)

(Powell & Driver, 2015; Stevens et al., 2022)

Make sure students use mathematics vocabulary as much as adults do!

VOCABULARY

Use Terms With Precision

Strategies for Teaching Mathematics Language

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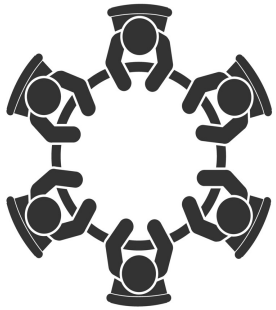
What are your opportunities for growth?

What are your plans for next Monday?
Next month?
Next year?



What are your strengths with vocabulary?

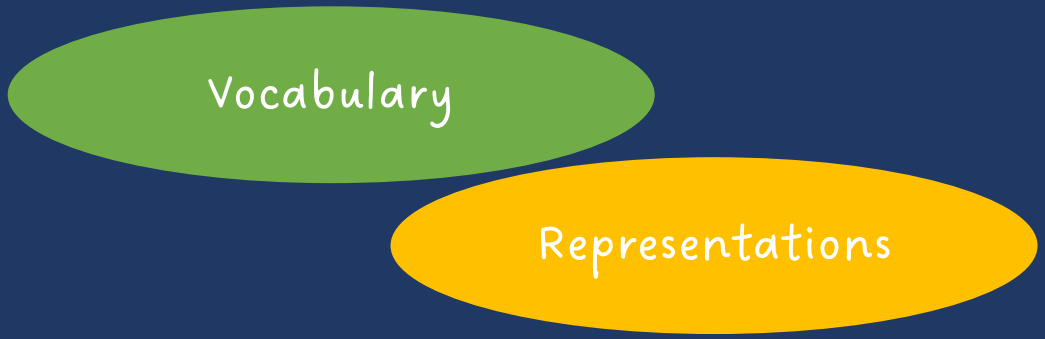
What are your opportunities for growth?

What are your plans for next Monday?
Next month?
Next year?

Representations

Instructional Platform

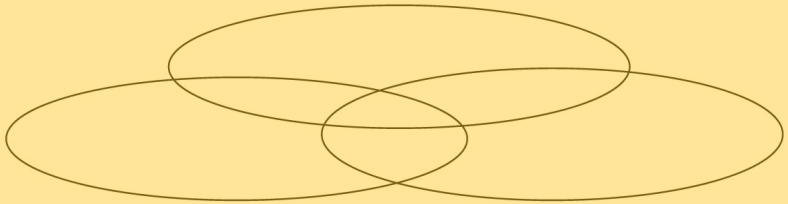
INSTRUCTIONAL DELIVERY



INSTRUCTIONAL STRATEGIES

REPRESENTATIONS

Research and Information



What are your strengths?

What are your opportunities for growth?

What are your plans for next Monday?
Next month?
Next year?

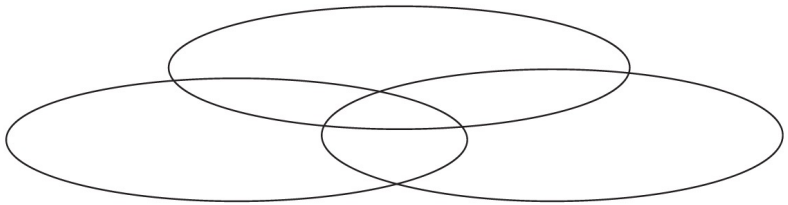
Hands-on manipulatives contribute to increases in mathematics performance.
(Bouck & Park, 2018; Carbonneau et al., 2013; Namkung & Bricko, 2021; Sherman & Bisanz, 2009; Strickland & Maccini, 2012)

Virtual manipulatives contribute to increases in mathematics performance.
(Bouck et al., 2020; Satsangi et al., 2016)

Other visuals (e.g., graphic organizers) contribute to increases in mathematics performance.
(Jitendra et al., 2009; Sharp & Dennis, 2017; van Garderen, 2007; Xin, 2008)

REPRESENTATIONS

Research and Information



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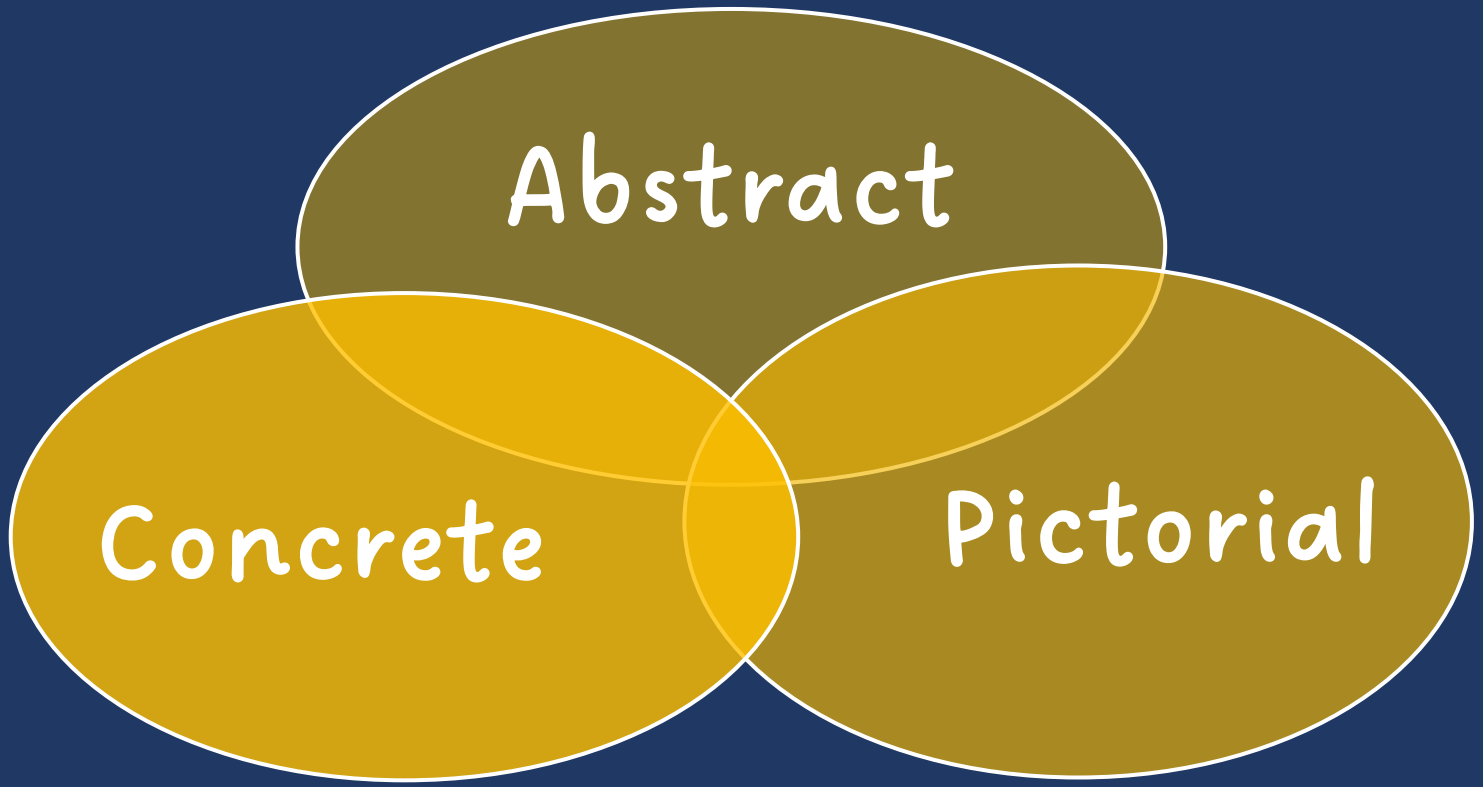
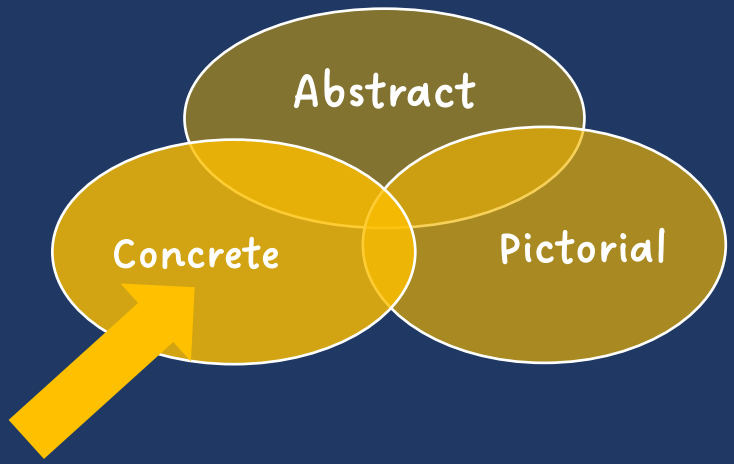
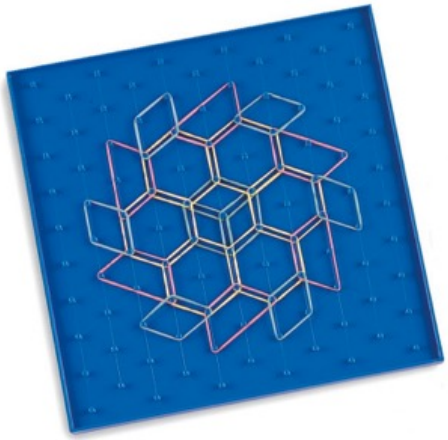
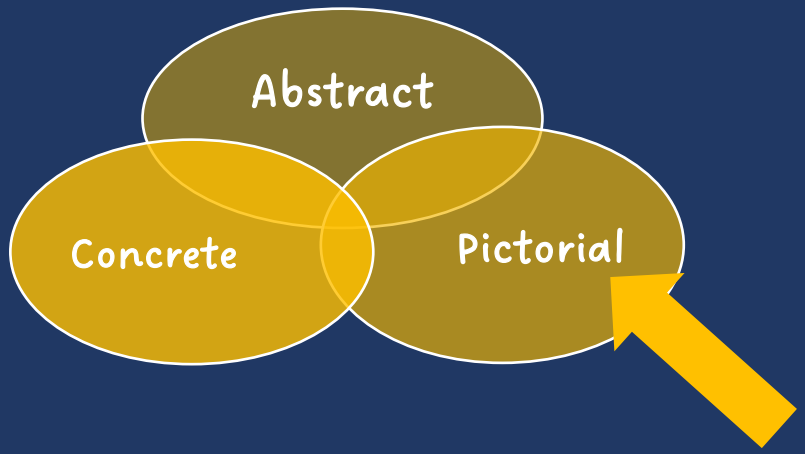
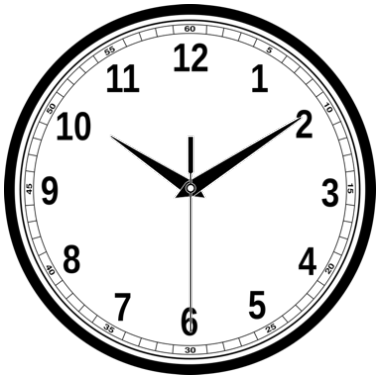
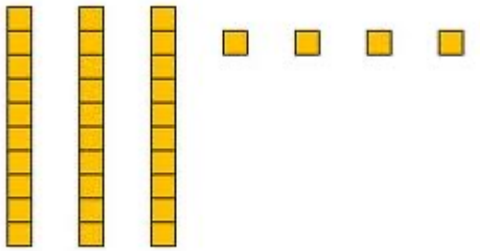


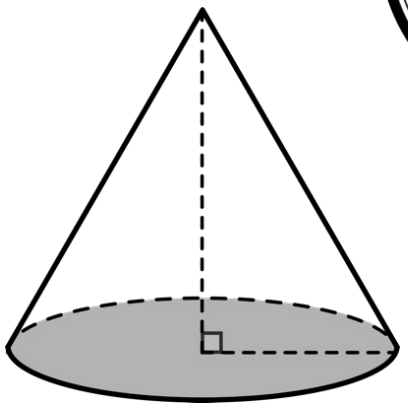


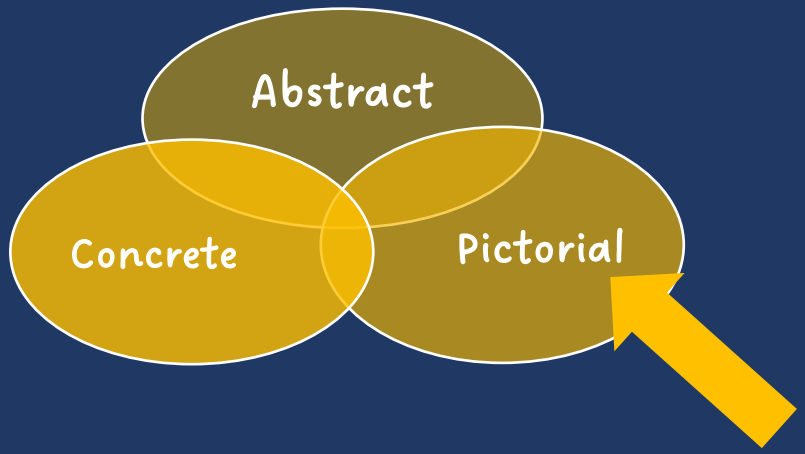


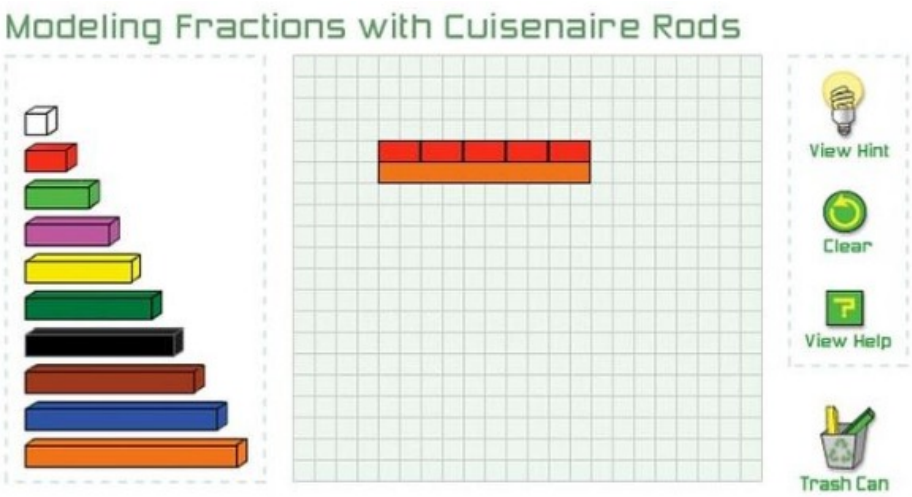


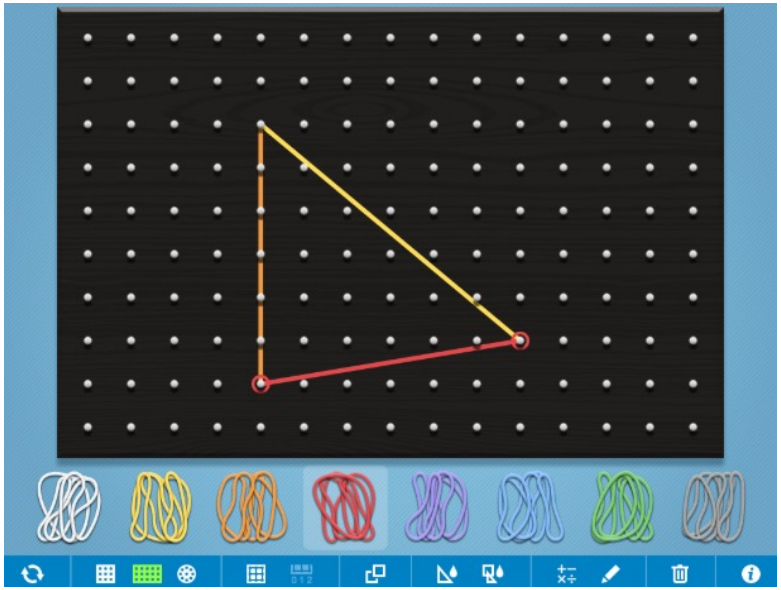


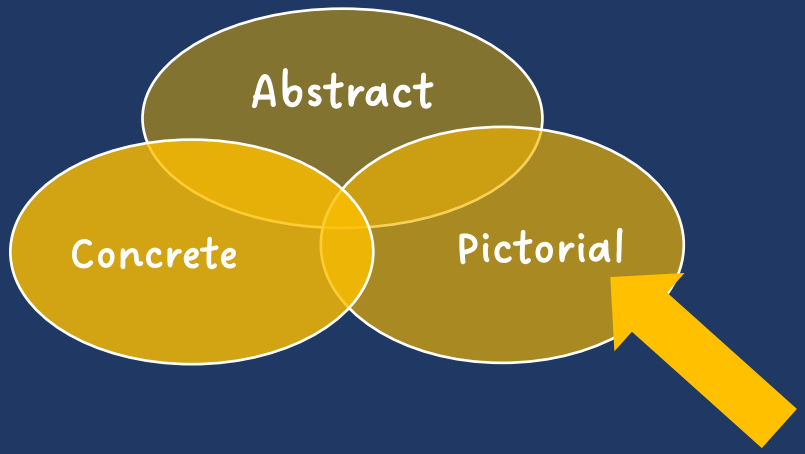


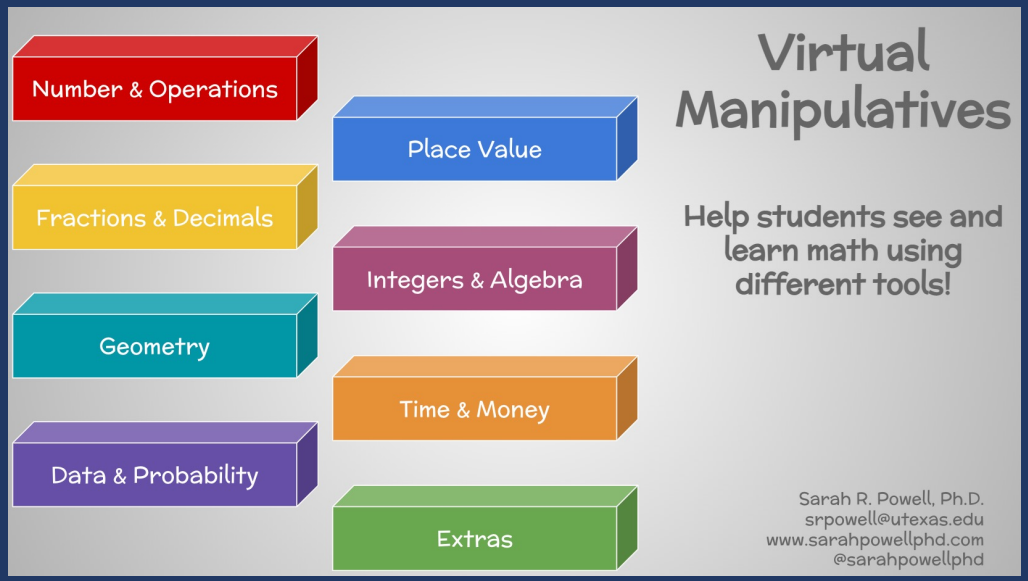




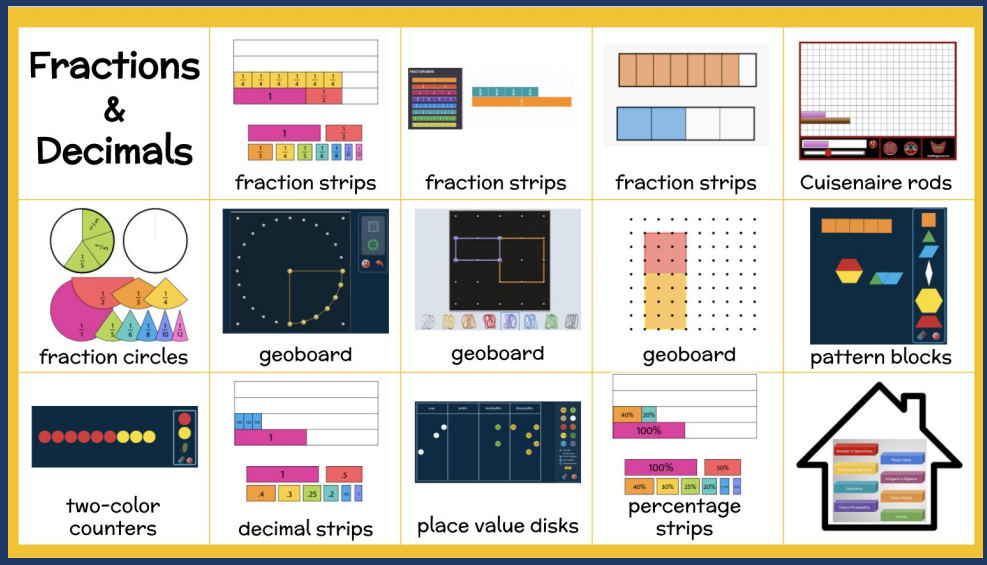


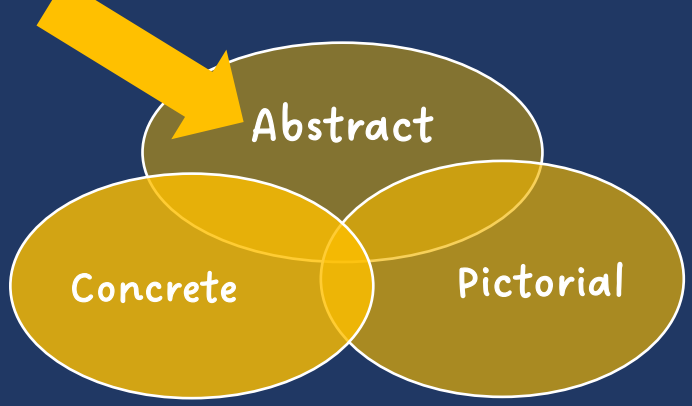






bit.ly/srpowell





$2 + 8 = 10$

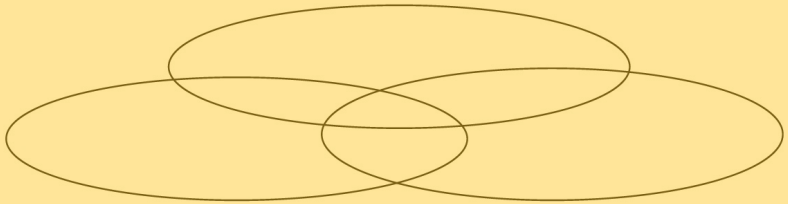
34 = 3 tens and 4 ones

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

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

REPRESENTATIONS

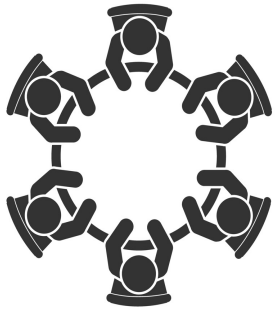
Research and Information



What are your strengths?

What are your opportunities for growth?

What are your plans for next Monday?
Next month?
Next year?



What are your strengths with multiple representations?

What are your opportunities for growth?

What are your plans for next Monday?

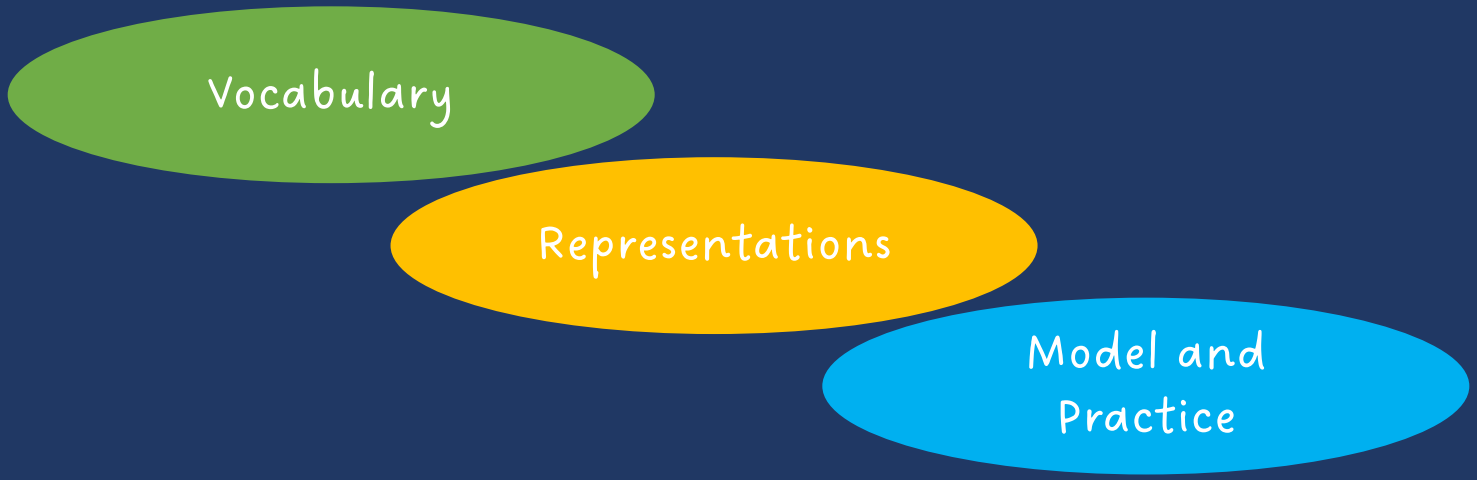
Next month?

Next year?

Model and Practice

Instructional Platform

INSTRUCTIONAL DELIVERY



INSTRUCTIONAL STRATEGIES

MODEL AND PRACTICE

Research and Information

MODELING

PRACTICE

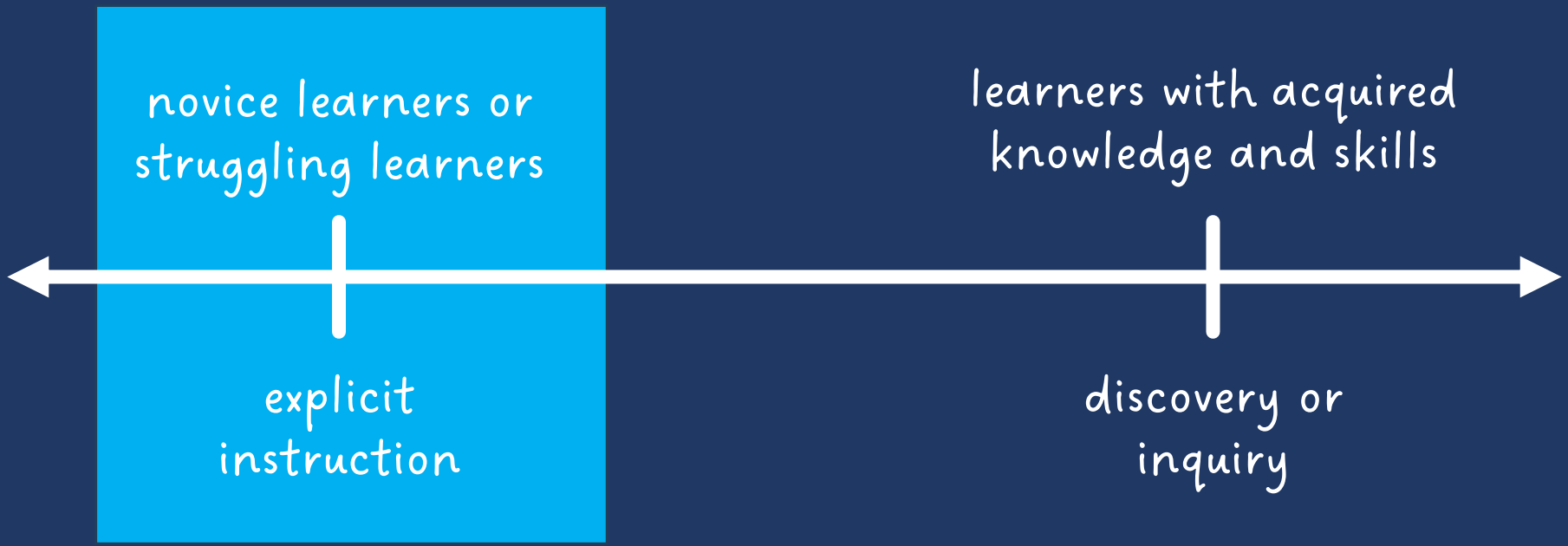
SUPPORTS

Over a half century of research supports explicit (i.e., direct, systematic) instruction.
(Stockard et al., 2018)

When compared to discovery approaches, explicit instruction demonstrates higher outcomes.
(Alfieri et al., 2011; Kroesbergen et al., 2004; Poncy et al., 2010)

Numerous meta-analyses and large-scale studies have identified explicit instruction as essential for the teaching and learning of mathematics.
(Chodura et al., 2015; Ennis & Losinski, 2019; Jitendra et al., 2018; Kong et al., 2021; Morgan et al., 2015; Nelson & McMaster, 2019; Powell et al., 2021).

What's the continuum of mathematics support?



Anita Archer (2019)

MODEL AND PRACTICE

Research and Information

MODELING

PRACTICE

SUPPORTS

MODELING

Step-by-step explanation

Planned examples

PRACTICE

Guided practice

Independent practice

SUPPORTS

Ask high-level and low-level questions

Eliciting frequent responses

Providing affirmative and corrective feedback

Modeling is a dialogue between the teacher and students.

MODELING

Step-by-step explanation

Planned examples

PRACTICE

Guided practice

Independent practice

SUPPORTS

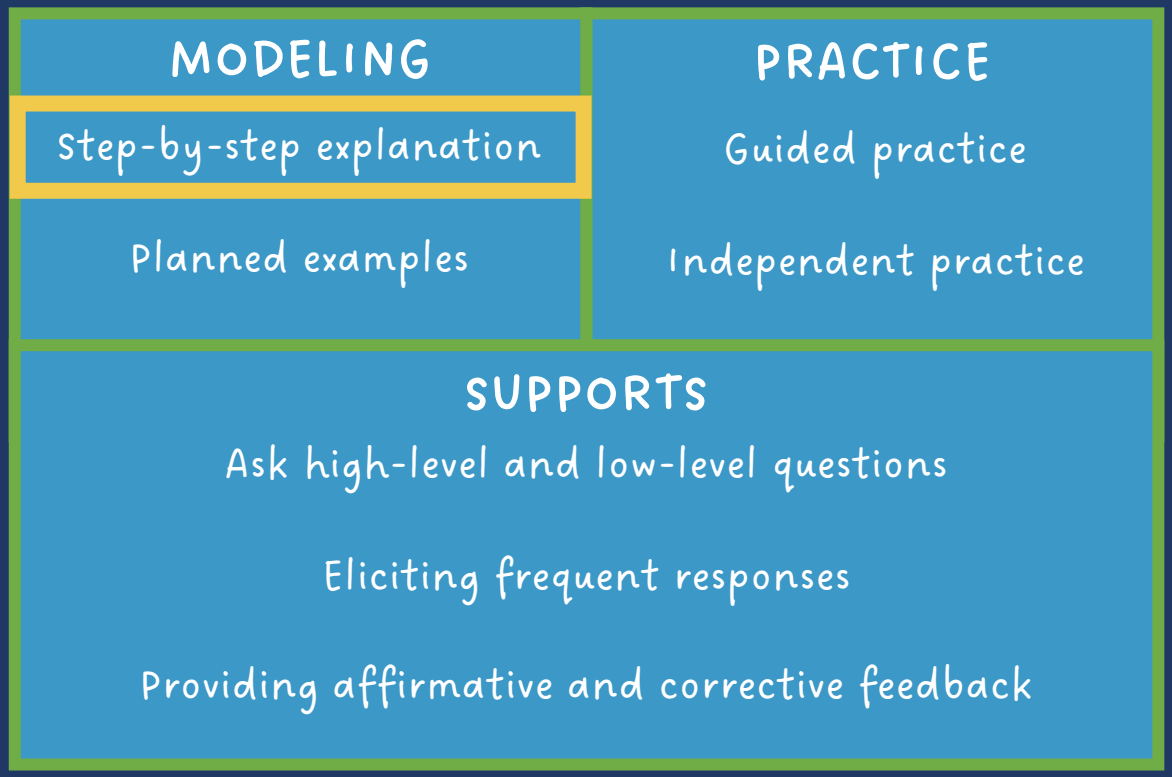
Ask high-level and low-level questions

Eliciting frequent responses

Providing affirmative and corrective feedback

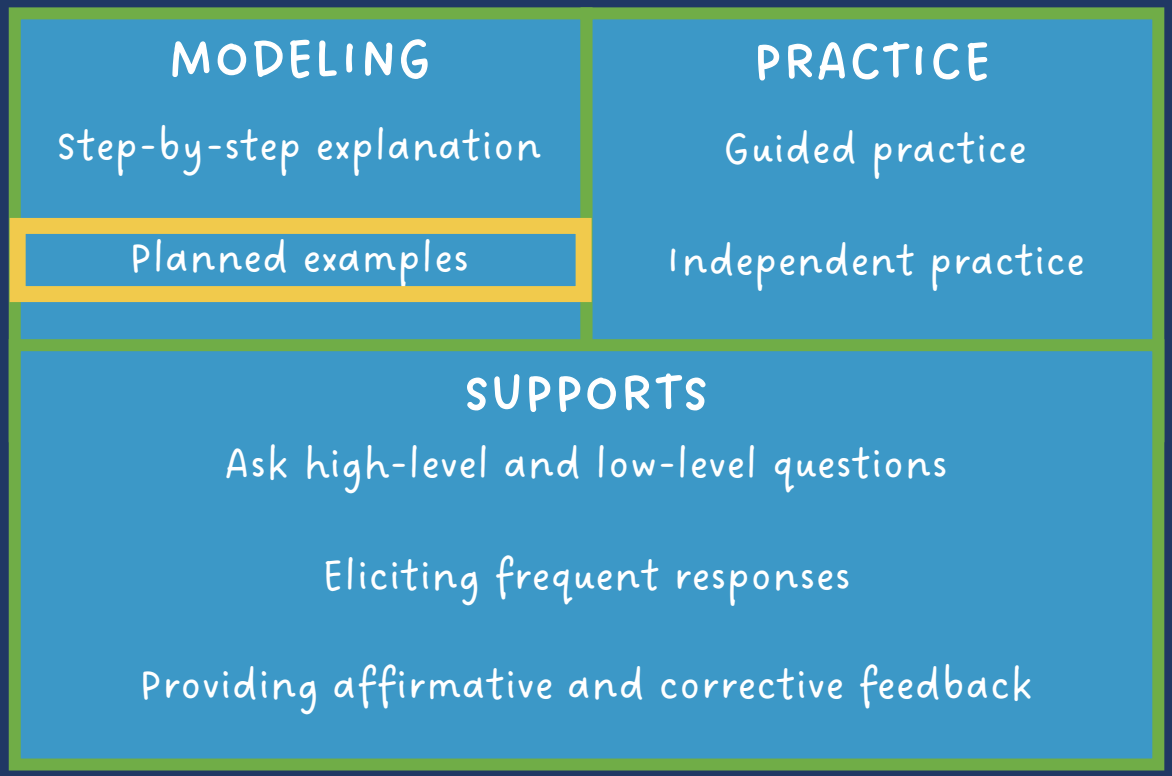
Modeling includes a step-by-step explanation of how to do a math problem.

A teacher may do 1 modeled problem or several.



Modeling needs to include planned examples.

These examples should be sequenced so easier skills lead to more difficult skills.



MODELING

Step-by-step explanation

Planned examples

PRACTICE

Guided practice

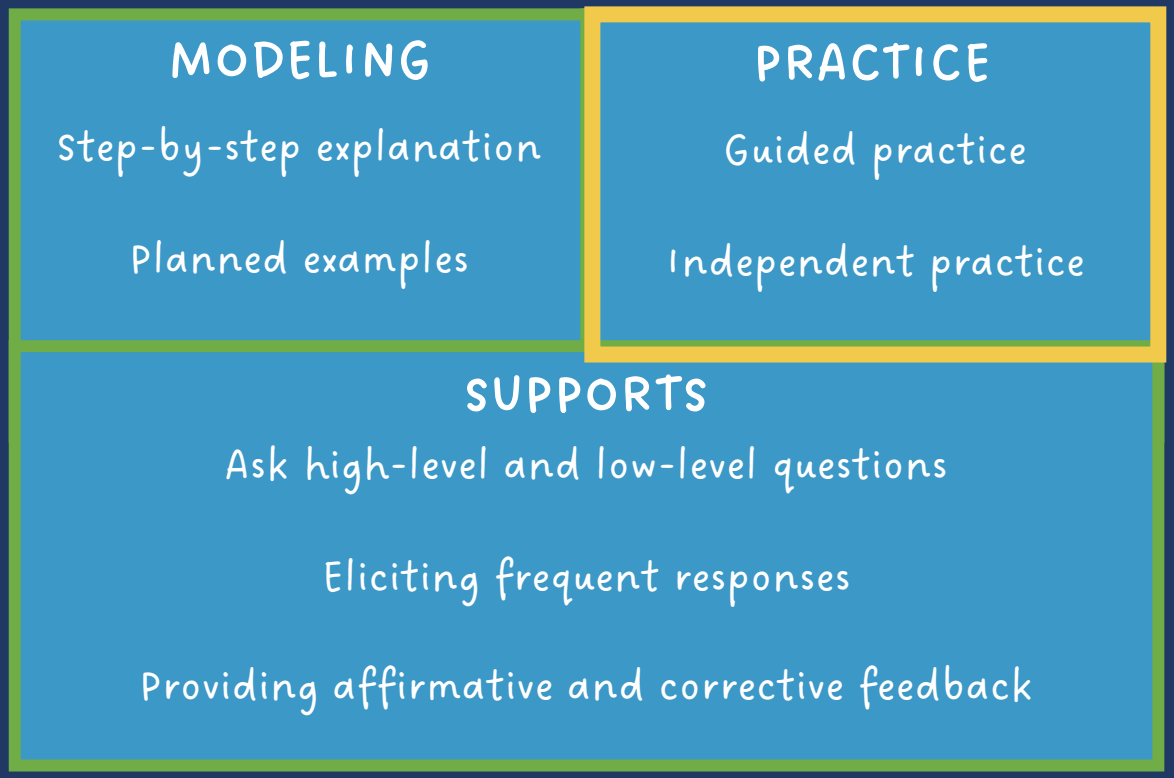
Independent practice

SUPPORTS

Ask high-level and low-level questions

Eliciting frequent responses

Providing affirmative and corrective feedback



Practice continues as a dialogue between the teacher and students.

MODELING	PRACTICE
Step-by-step explanation	Guided practice
Planned examples	Independent practice

SUPPORTS

Ask high-level and low-level questions

Eliciting frequent responses

Providing affirmative and corrective feedback

Guided practice is practice in which the teacher and students practice problems together.

"Let's work on a problem together."

MODELING

Step-by-step explanation

Planned examples

PRACTICE

Guided practice

Independent practice

SUPPORTS

Ask high-level and low-level questions

Eliciting frequent responses

Providing affirmative and corrective feedback

Independent practice is practice in which the students practice independently with teacher support.

"Now, you'll practice a problem on your own. Use your attack strategy!"

MODELING

Step-by-step explanation

Planned examples

PRACTICE

Guided practice

Independent practice

SUPPORTS

Ask high-level and low-level questions

Eliciting frequent responses

Providing affirmative and corrective feedback

MODELING

Step-by-step explanation

Planned examples

PRACTICE

Guided practice

Independent practice

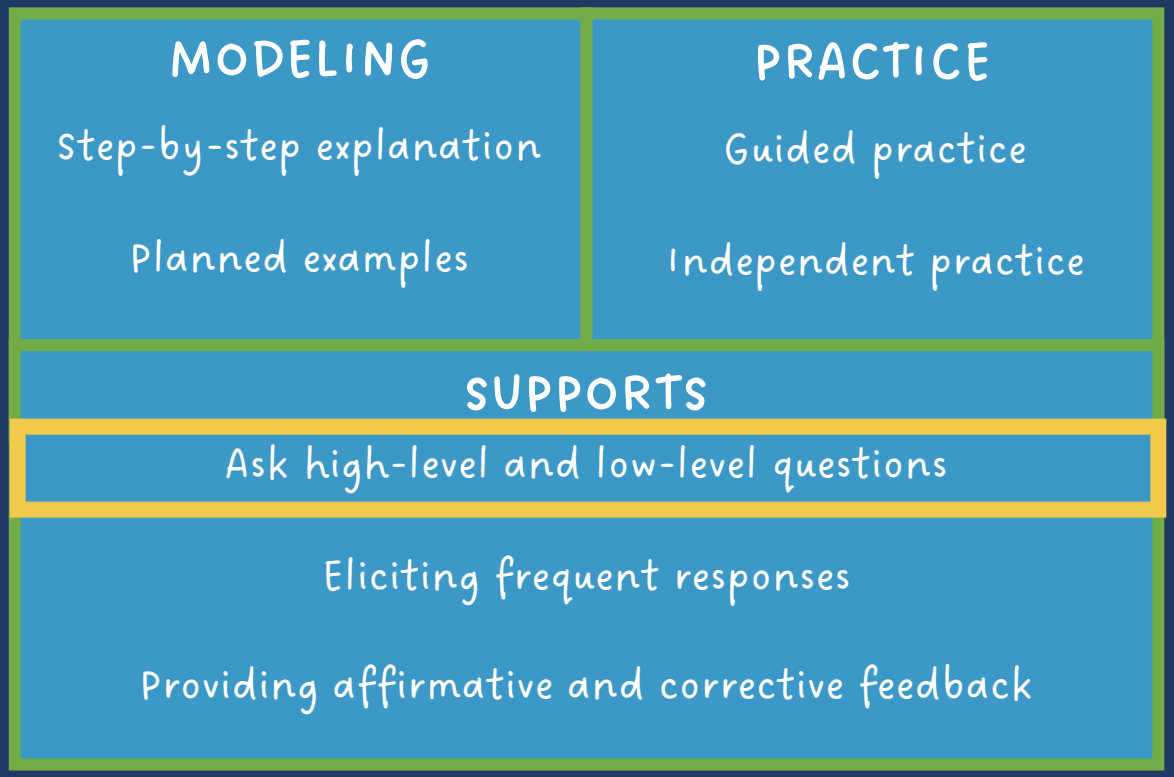
SUPPORTS

Ask high-level and low-level questions

Eliciting frequent responses

Providing affirmative and corrective feedback

These **Supports** should be used in both **Modeling** and **Practice.**



During **Modeling** and **Practice**, it is essential to engage students and check for understanding.

MODELING	PRACTICE
Step-by-step explanation	Guided practice
Planned examples	Independent practice

SUPPORTS

Ask high-level and low-level questions

Eliciting frequent responses

Providing affirmative and corrective feedback

"What is 7 times 9?"

"63."

MODELING	PRACTICE
Step-by-step explanation	Guided practice
Planned examples	Independent practice

SUPPORTS

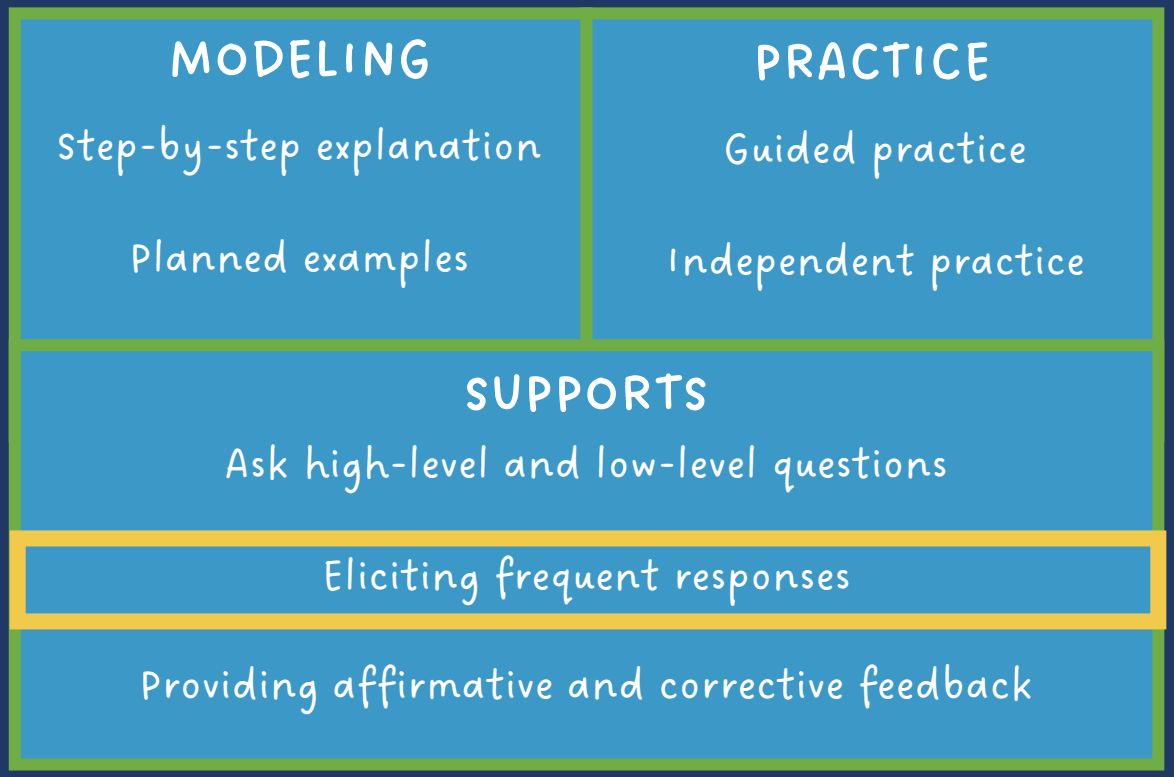
Ask high-level and low-level questions

Eliciting frequent responses

Providing affirmative and corrective feedback

"Why do you have to regroup?"

"Because we have 12 ones. When you have more than 9 ones, you have to regroup."



During **Modeling** and **Practice**, students should frequently respond. The frequent responses keeps student attention and keeps student learning active.

MODELING

Step-by-step explanation

Planned examples

PRACTICE

Guided practice

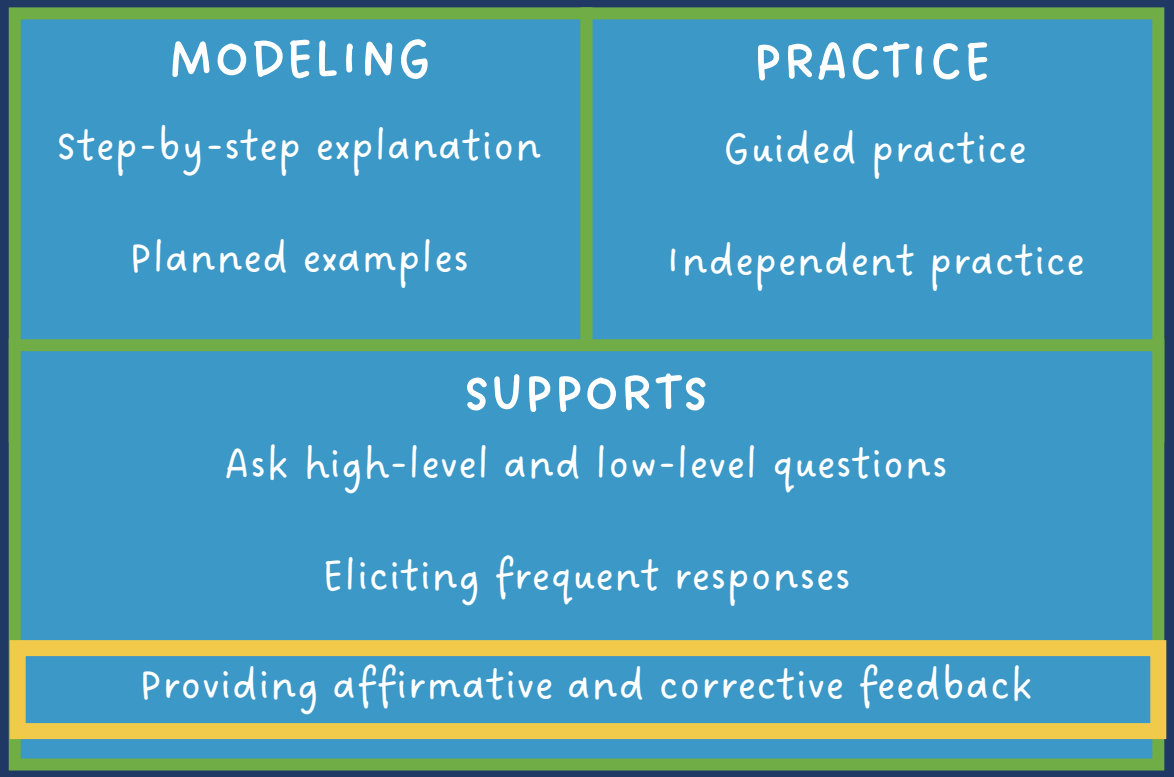
Independent practice

SUPPORTS

Ask high-level and low-level questions

Eliciting frequent responses

Providing affirmative and corrective feedback



During **Modeling** and **Practice**, students should receive immediate feedback on their responses.

MODELING

Step-by-step explanation

Planned examples

PRACTICE

Guided practice

Independent practice

SUPPORTS

Ask high-level and low-level questions

Eliciting frequent responses

Providing affirmative and corrective feedback

"Nice work using your word problem attack strategy."

MODELING

Step-by-step explanation

Planned examples

PRACTICE

Guided practice

Independent practice

SUPPORTS

Ask high-level and low-level questions

Eliciting frequent responses

Providing affirmative and corrective feedback

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

MODELING

Step-by-step explanation

Planned examples

PRACTICE

Guided practice

Independent practice

SUPPORTS

Ask high-level and low-level questions

Eliciting frequent responses

Providing affirmative and corrective feedback

MODEL AND PRACTICE

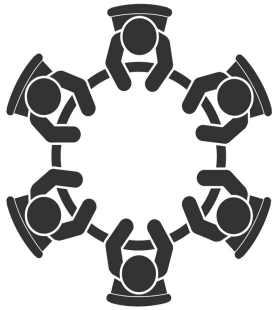
What are your strengths?

What are your opportunities for growth?

What are your plans for next Monday?
Next month?
Next year?

FLUENCY

Research and Information



What are your strengths with modeling and practice?

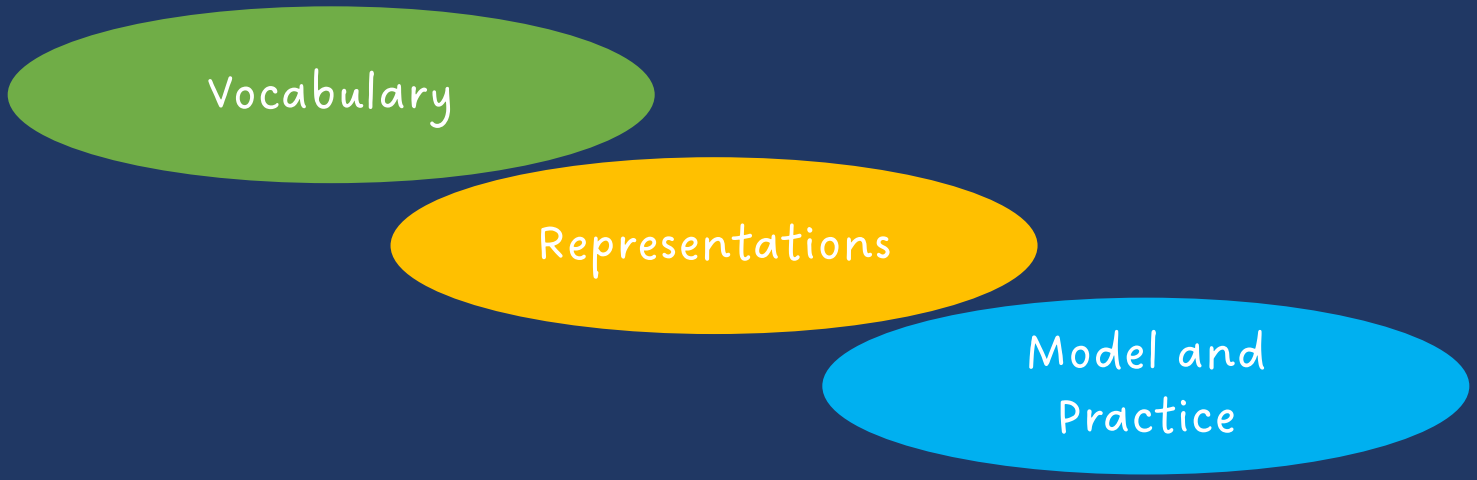
What are your opportunities for growth?

What are your plans for next Monday?
Next month?
Next year?

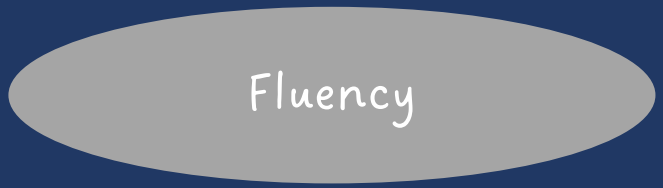
Build Fluency

Instructional Platform

INSTRUCTIONAL DELIVERY



INSTRUCTIONAL STRATEGIES



MODEL AND PRACTICE

What are your strengths?

What are your opportunities for growth?

What are your plans for next Monday?
Next month?
Next year?

FLUENCY

Research and Information

Mathematics fluency, particularly fluency with facts and computation, is related to overall mathematics performance.

(Bailey et al., 2012; Cirino et al., 2019; Koponen et al., 2007, 2017; Vukovic et al., 2014

Fact fluency practice improves mathematics fact performance.

(Burns et al., 2010; Codding et al., 2011; McCallum et al., 2004; Nelson et al., 2013; Poncy et al., 2010; Schutte et al., 2015; Stocker & Kubina, 2017)

Fluency is doing mathematics easily and accurately.

Fluency in mathematics makes mathematics easier.

Fluency provides less stress on working memory.

Fluency helps students build confidence with mathematics.

With fluency, it is important to emphasize both conceptual learning and procedural learning.

Addition	Subtraction
Multiplication	Division

Counting

Comparing numbers

Counting coins

Telling time

Representing fractions

Identifying shapes

Measurement

Solving equations

Memorization or automaticity

Ease and accuracy

FLUENCY

Types of Fluency

Type	Memorization?	
	Yes	No

What are your strengths?

What are your opportunities for growth?

What are your plans for next Monday?
Next month?
Next year?

List different types of fluency. Discuss whether they require memorization.

Addition	Subtraction
Multiplication	Division

Build fluency with math facts.

- Addition: single-digit addends
- Subtraction: single-digit subtrahend
- Multiplication: single-digit factors
- Division: single-digit divisor

$$\begin{array}{r} 5 \\ +\ 8 \\ \hline \end{array} \qquad \begin{array}{r} 9 \\ -\ 4 \\ \hline \end{array} \qquad \begin{array}{r} 6 \\ \times\ 7 \\ \hline \end{array} \qquad \begin{array}{r} 56 \\ \div\ 8 \\ \hline \end{array}$$

DAILY

BRIEF

Work on small sets of facts

Work on unknown facts
(in combination with known facts)

Dice

Roll the Dice

8 + 7 = 15

____ + ____ = ____

____ + ____ = ____

____ − ____ = ____

____ − ____ = ____

____ + ____ = ____

____ + ____ = ____

____ − ____ = ____

____ − ____ = ____

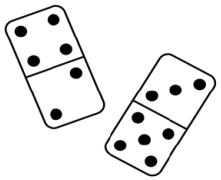
Beach Ball

4 plus 6 equals 10.

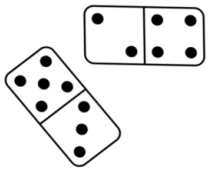
7 plus 6 equals 13.

2 plus 2 equals 4.

Dominoes



Dominoes



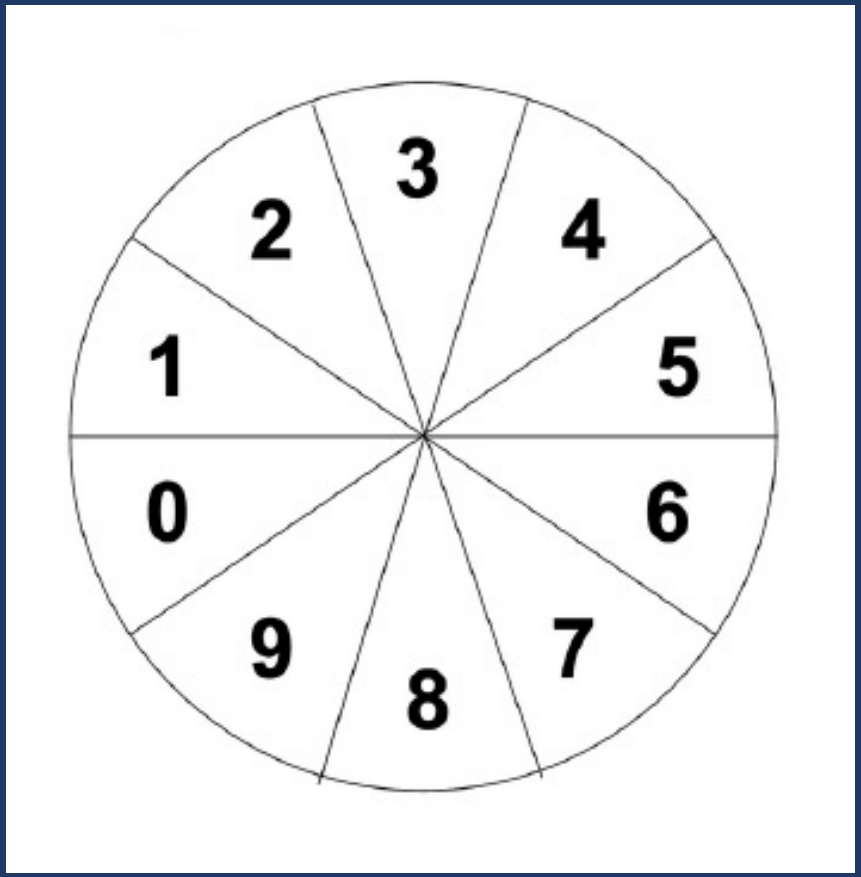
4 + 6 = 10	____ + ____ = ____
____ − ____ = ____	____ − ____ = ____
____ × ____ = ____	____ × ____ = ____

Spinner

2 times 4 equals 8.

6 times 9 equals 54.

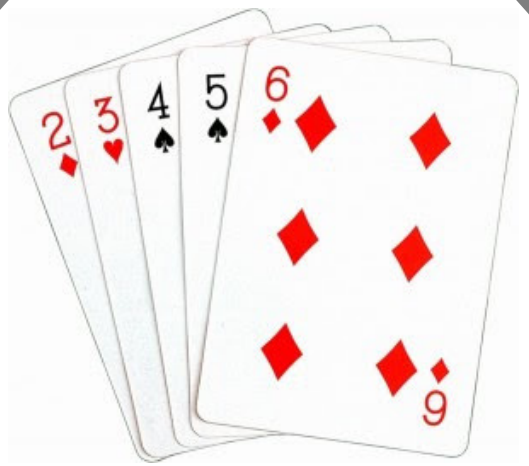
7 times 1 equals 7.



Playing Cards

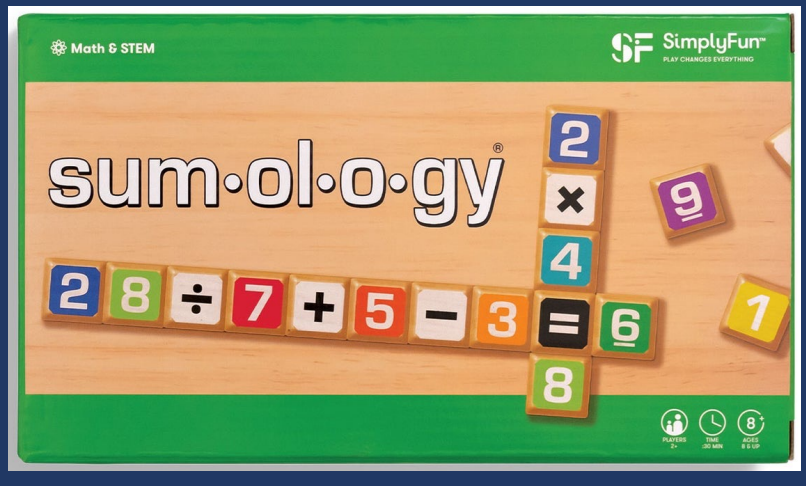
Cards 

____ + ____ = ____	____ + ____ = ____
____ + ____ = ____	____ + ____ = ____
6 − 2 = 4	____ − ____ = ____
____ − ____ = ____	____ − ____ = ____

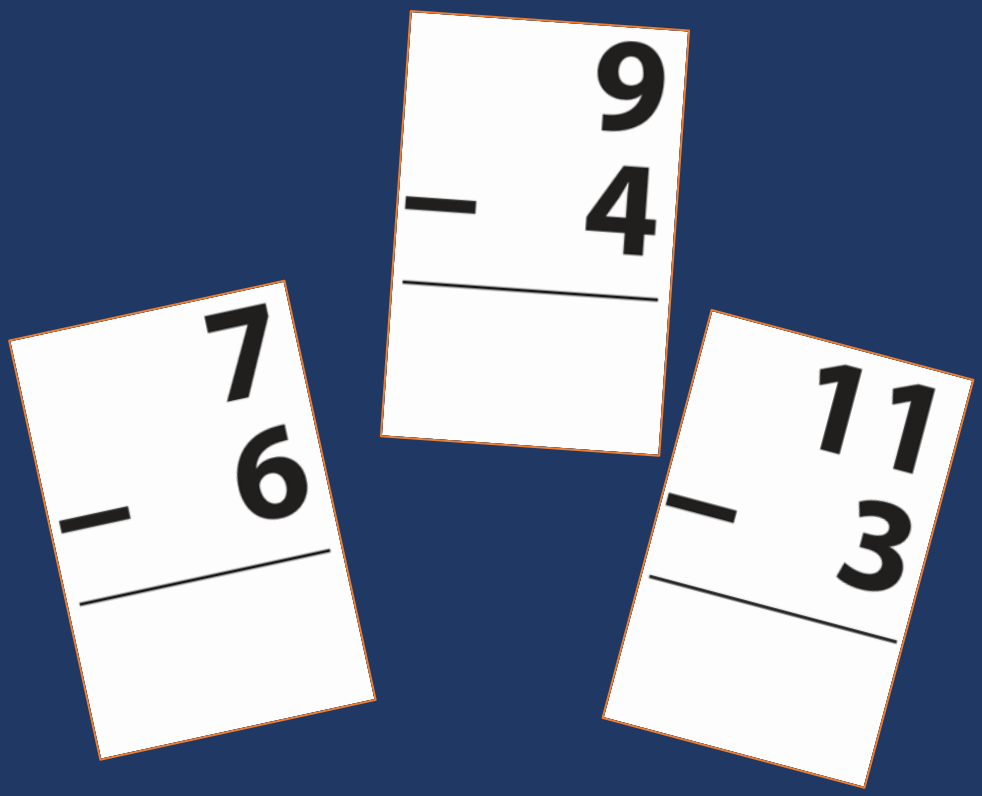


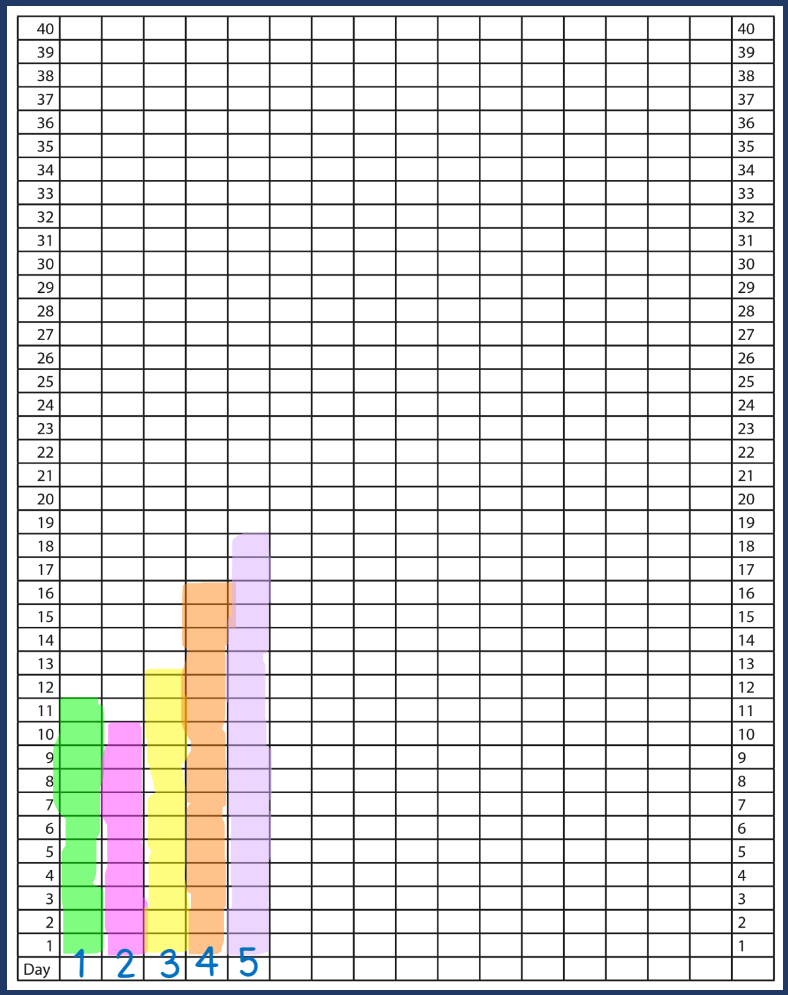
Wrap-Ups

Mobi Math



Flash Cards

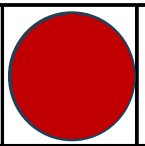
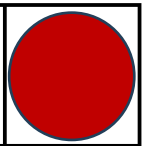
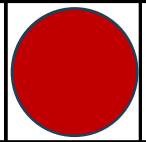
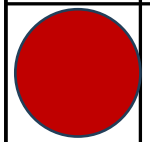




Bingo

Math Bingo

Your teacher will call out a math problem. Quickly solve the problem. If you have the answer on your bingo card, cover it with a chip. The middle space is free!
The first person to finish the pattern your teacher decides wins!
(5 in a row, 4 corners, etc.)

12		24	100	
15	0	42	16	20
8	35		6	4
	2	40	27	7
50	10	30	48	14

8 times 10 equals...

3 times 1 equals...

2 plus 3 equals...

Magic Squares

Magic Squares Board

1. Place the sum or product in the bottom right corner.
2. In the bottom row, create a fact with a sum or product of the bottom right corner.
3. In the right column, create a fact with a sum or product of the bottom right corner.
4. Create two columns with a sum or product of the bottom number.
5. Create two rows with a sum or product of the right column number.
6. Write the created facts below.

0	2	2
5	4	9
5	6	11

0 + 2 = 2

5 + 4 = 9

2 − 0 = 2

9 − 5 = 4

4	5	9
2	0	2
6	5	11

7	3	10
1	0	1
8	3	11

6	1	7
3	2	5
9	3	12

4	4	8
2	2	4
6	6	12

5	1	6
4	3	7
9	4	13

5	1	6
3	4	7
8	5	13

6	3	9
2	3	5
8	6	14

1	5	6
6	2	8
7	7	14

6	2	8
3	4	7
9	6	15

4 5 2 0

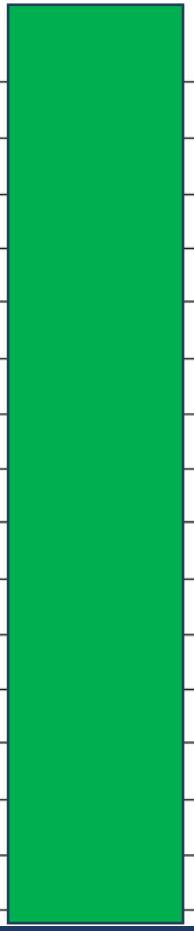
5 6 9 11 2

Cover, Copy, Compare

Cover, Copy, Compare

	9 x 6 54	8 × 6 48	
7 × 8 56		6 × 5 30	
9 × 9 81		7 × 9 63	
6 × 7 42		8 × 5 40	
8 × 8 64		7 × 7 49	

File Folder



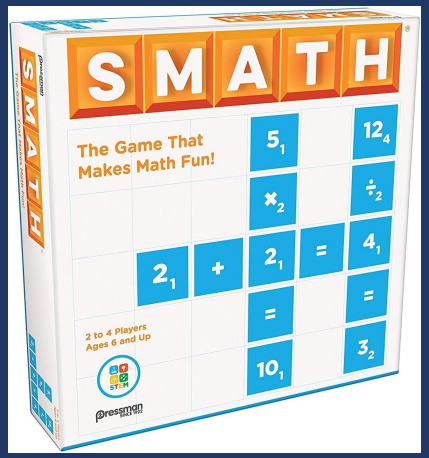
6 + 3 = 9
1 + 7 = 8
6 + 4 = 10
7 + 3 =
2 + 7 =
5 + 6 =
4 + 7 =
7 + 8 =
6 + 7 =
7 + 9 =
7 + 6 =
8 + 7 =
7 + 0 =
9 + 6 =
6 + 0 =
6 + 8 =

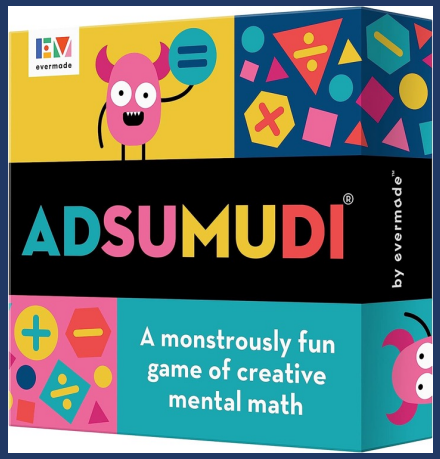
Taped Problems

Taped Problems

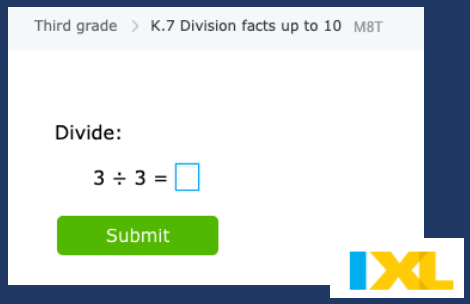
8 × 8 = 64	7 × 7 = 49	8 × 7 =
6 × 5 =	6 × 7 =	6 × 8 =
5 × 7 =	5 × 5 =	5 × 6 =
6 × 6 =	8 × 6 =	7 × 6 =
7 × 8 =	8 × 5 =	7 × 5 =

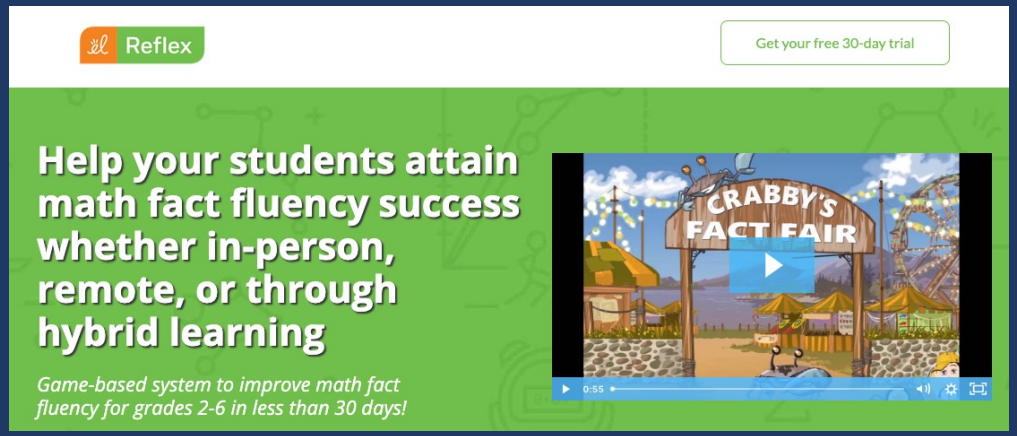
Games

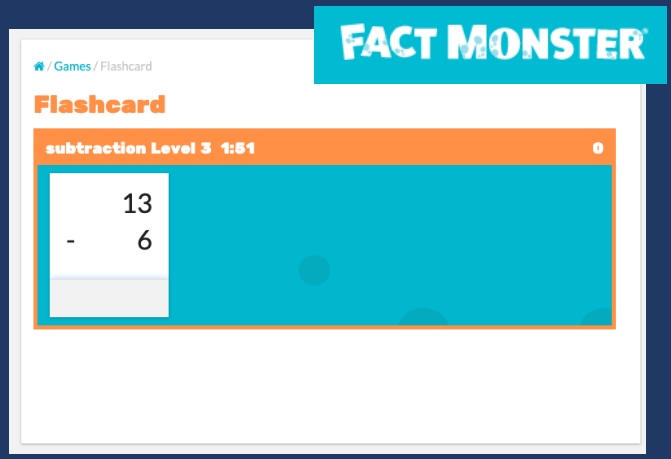




Technology







DAILY

BRIEF

Work on small sets of facts

Work on unknown facts
(in combination with known facts)

FLUENCY

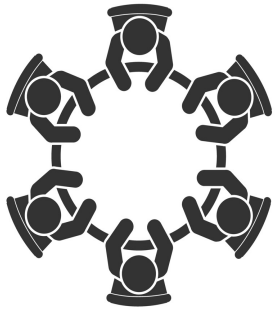
Types of Fluency

Type	Memorization?	
	Yes	No

What are your strengths?

What are your opportunities for growth?

What are your plans for next Monday?
Next month?
Next year?



What are your strengths with building fluency?

What are the opportunities for growth?

What are your plans for next Monday?

Next month?

Next year?

Word Problems

Instructional Platform

INSTRUCTIONAL DELIVERY

Vocabulary

Representations

Model and Practice

INSTRUCTIONAL STRATEGIES

Fluency

Word Problems

WORD PROBLEMS

Research and Information

What are your strengths?

What are your opportunities for growth?

What are your plans for next Monday?
Next month?
Next year?

Key words tied to operations is an ineffective word-problem strategy.
(Karp et al., 2019; Powell et al., 2022)

Using a meta-cognitive strategy improves word-problem performance.
(Freeman-Green et al., 2015; Krawec et al., 2012; Montague et al., 2011; Swanson et al., 2014)

A focus on schemas improves word-problem performance.
(Alghamdi et al., 2020; Cook et al., 2020; Flores et al., 2016; Fuchs et al., 2021; Griffin et al., 2019; Jitendra et al., 2013; Lein et al., 2020; Peltier et al., 2020; Powell et al., 2022; Xin & Xhang, 2009; Zheng et al., 2013)

1. Keywords tied to operations

2. Presenting problems by operation

Teach an attack strategy

Teach about schemas

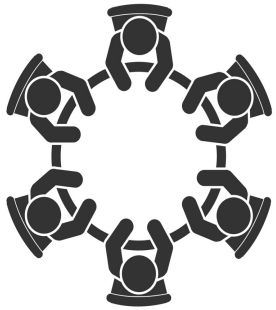
WORD PROBLEMS

Research and Information

What are your strengths?

What are your opportunities for growth?

What are your plans for next Monday?
Next month?
Next year?



What are your strengths with word-problem solving?

What are your opportunities for growth?

What are your plans for next Monday?

Next month?

Next year?

Students require modeling and practice on how to use the language of mathematics.

Students should use hands-on tools, virtual manipulatives, drawings, and other visuals to understand mathematics concepts and procedures.

Teachers should use systematic and explicit instruction to help students develop a strong foundation for specific mathematics skills.

Teachers should use fluency building activities to build counting fluency and fluency with the operations.

Students should learn how to set up and solve word problems by combining an attack strategy with a focus on word-problem schemas.

Instructional Platform

INSTRUCTIONAL DELIVERY

Vocabulary

Representations

Model and Practice

INSTRUCTIONAL STRATEGIES

Fluency

Word Problems

https://intensiveintervention.org

National Center on
INTENSIVE INTERVENTION
at American Institutes for Research

Search

Intensive Intervention | Tools Charts | Implementation Support | Intervention Materials | Information For...

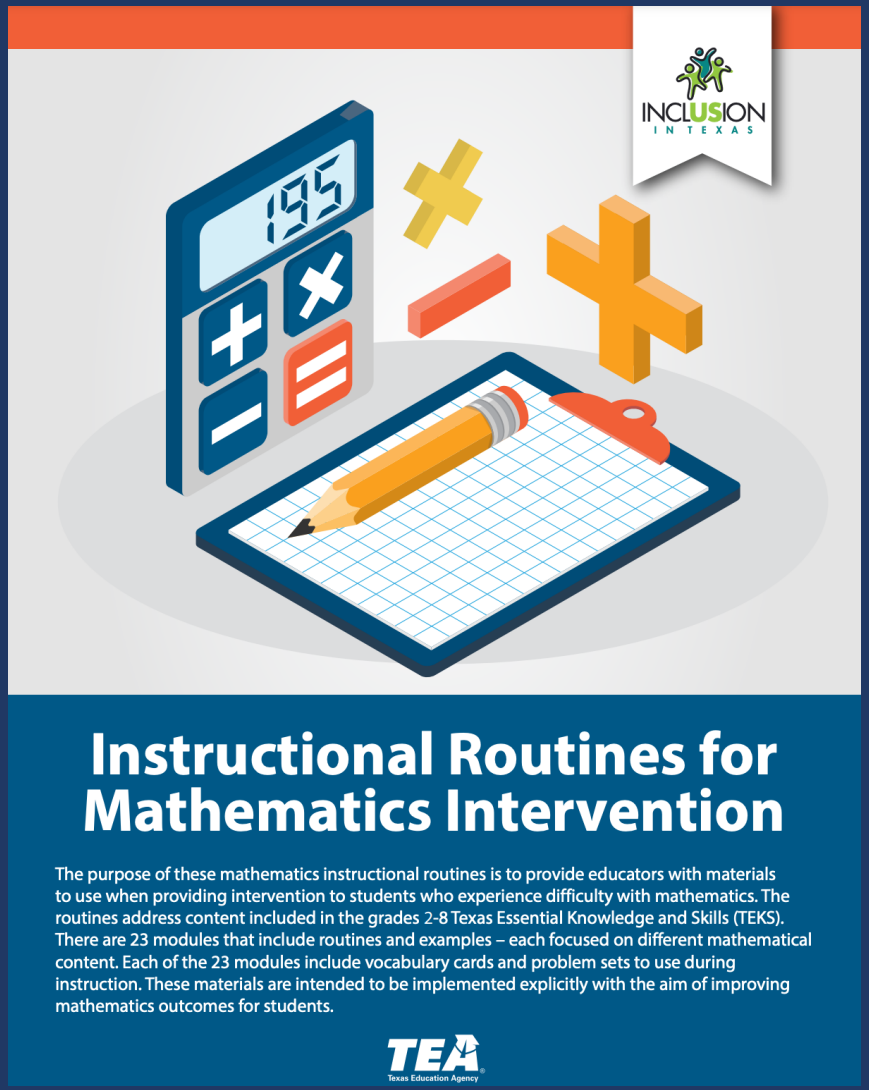
Intensive Intervention in Mathematics Course Content

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.

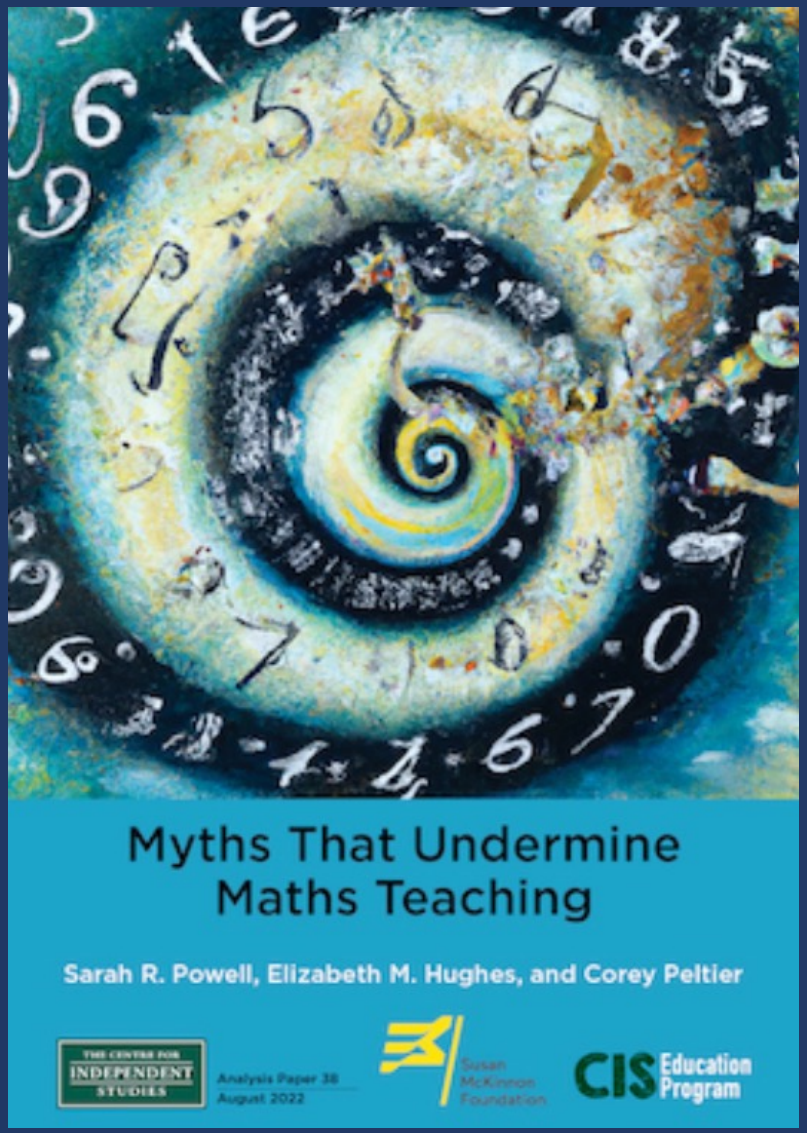
Intensive instruction was recently identified as a high-leverage practice in special education, and DBI is a research based approach to delivering intensive instruction across content areas (NCII, 2013). This course provides learners with an opportunity to extend their understanding of intensive instruction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

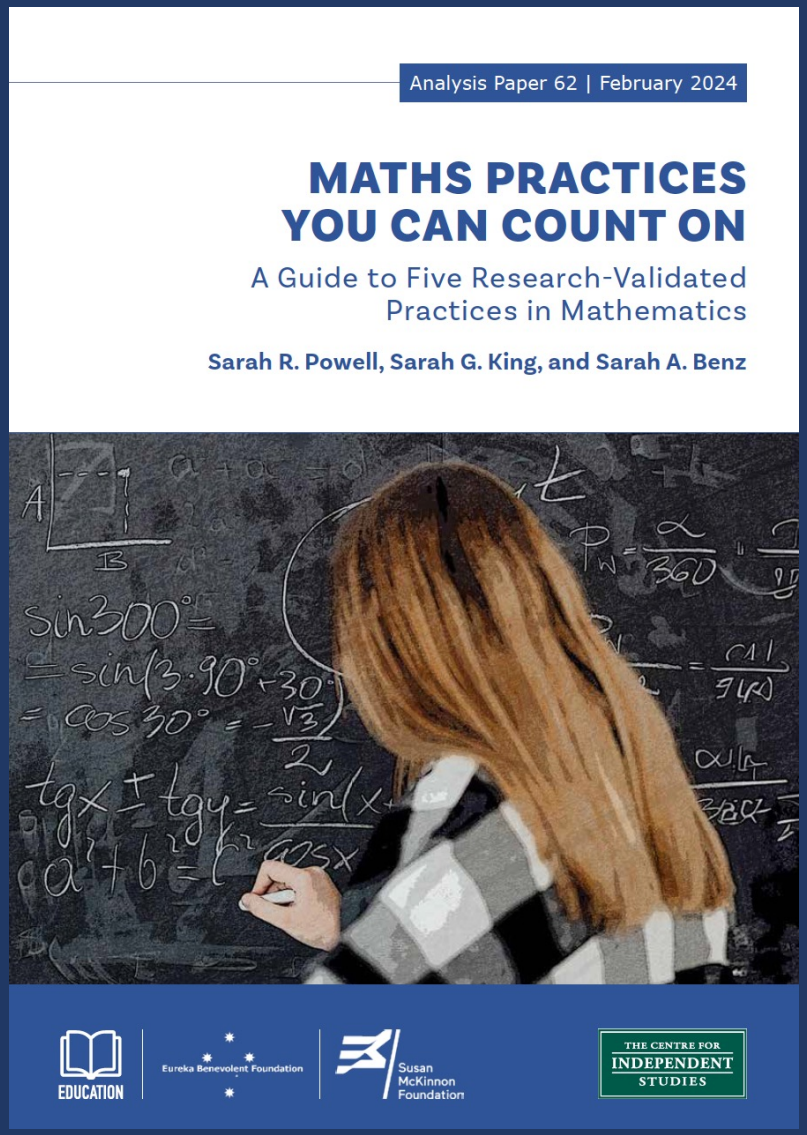
MODULE 5: INTENSIVE MATHEMATICS INTERVENTION: INSTRUCTIONAL STRATEGIES



https://spedsupportstage.tea.texas.gov/resource-library/instructional-routines-mathematics-intervention

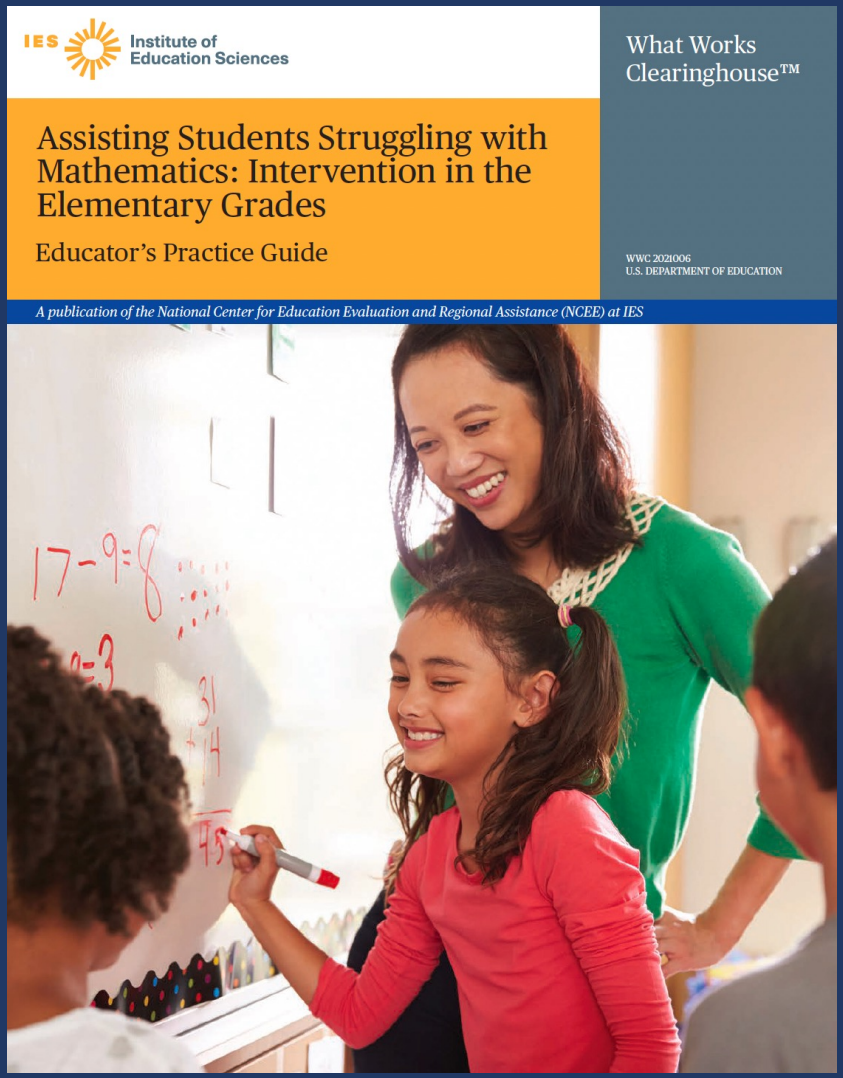


Centre for Independent Studies



Centre for Independent Studies

https://ies.ed.gov/ncee/wwc/PracticeGuide/26



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