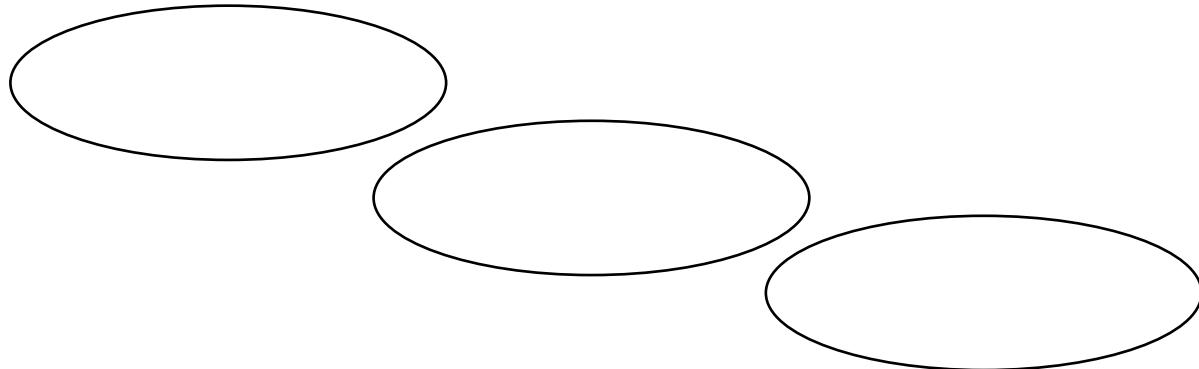


# What's Essential in Math Intervention?

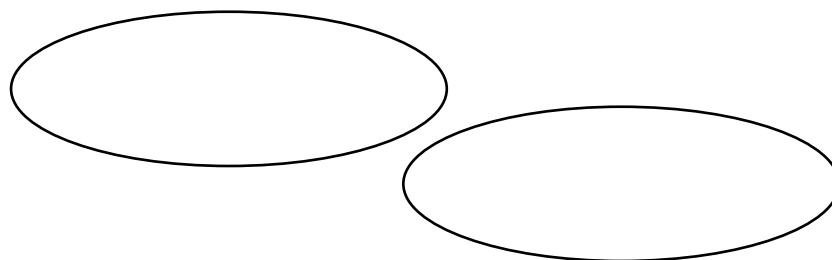
srpowell@utexas.edu @sarahpowellphd  
www.sarahpowellphd.com

## Instructional Platform

## Instructional Delivery



## Instructional Strategies



## Explicit Instruction

MODELING

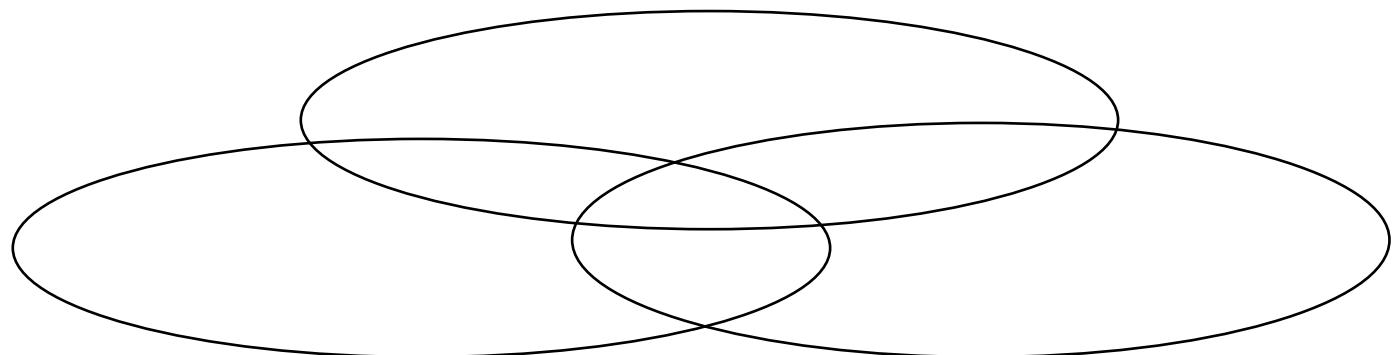
PRACTICE

SUPPORTS

## Mathematical Language

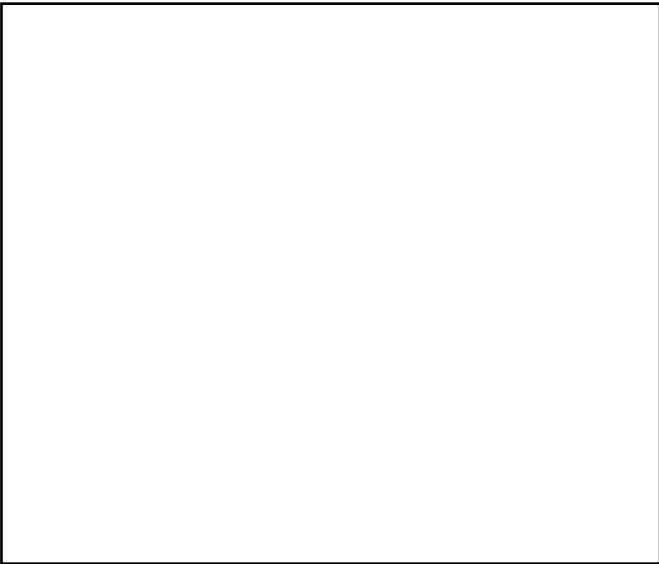
Instead of that...	Say this...

## Multiple Representations

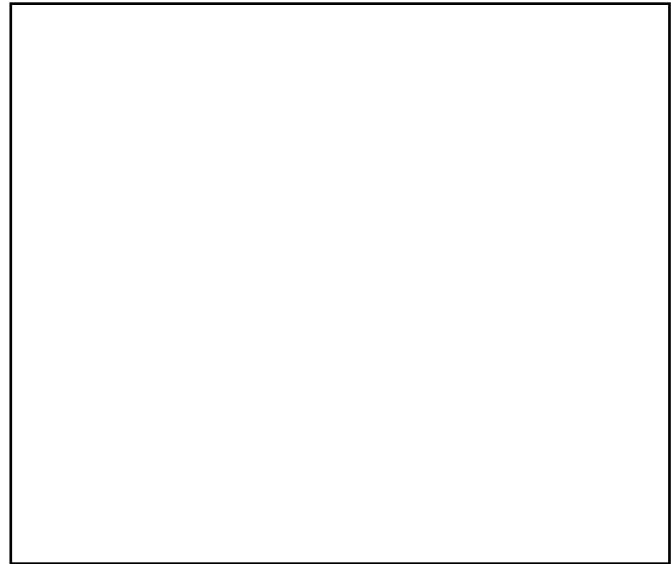


# Fluency

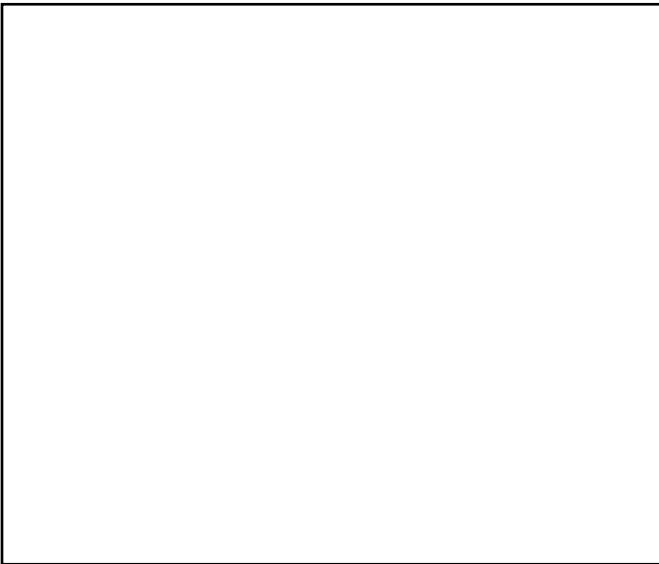
Addition

A large, empty rectangular box with a black border, intended for writing addition facts.

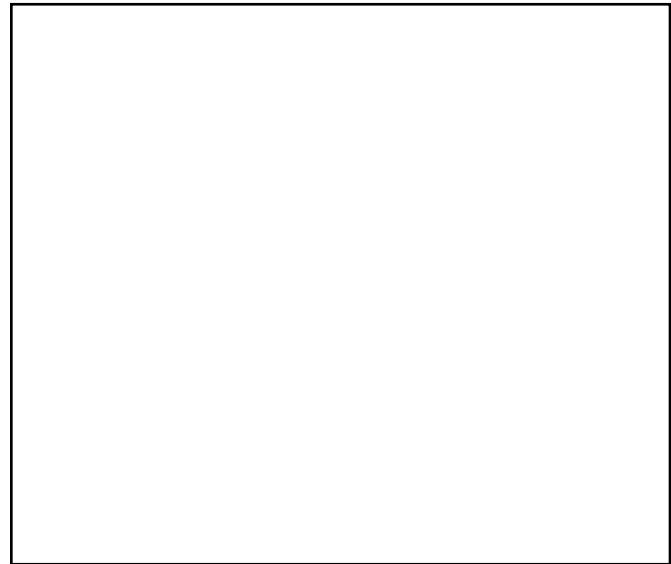
Subtraction

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Multiplication

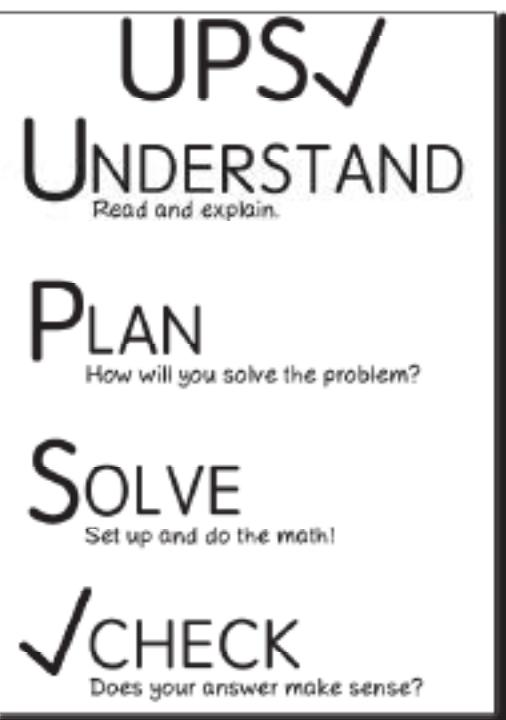
A large, empty rectangular box with a black border, intended for writing multiplication facts.

Division

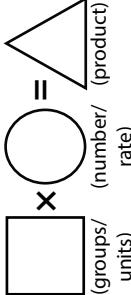
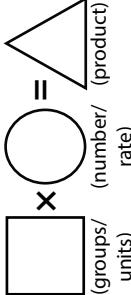
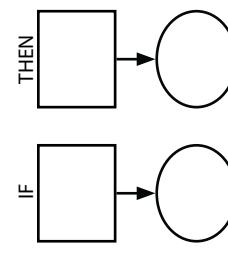
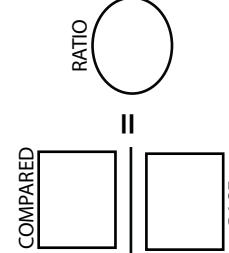
A large, empty rectangular box with a black border, intended for writing division facts.

## Word-Problem Solving

## Attack Strategy



Schema and Definition	Equations and Graphic Organizers	Examples	Variations
Total (Combine; Part-part- whole) Parts combined for a sum	$P1 + P2 = T$ (part + part = total)	<p>Sum unknown: Lyle has 11 red apples and 18 green apples. How many apples does Lyle have altogether?</p>	<p>Part unknown: Lyle has 29 red and green apples. If 11 of the apples are red, how many green apples does Lyle have?</p> <p>More than two parts: Lyle has 34 apples. Of the apples, 11 are red, 18 are green, and the rest are yellow. How many yellow apples does Lyle have?</p>
Difference (Compare) Sets compared for a difference	$B - S = D$ (bigger - smaller = difference)	<p>Difference unknown: Sasha wrote 85 words in her essay, and Tabitha wrote 110 words. How many fewer words did Sasha write than Tabitha?</p>	<p>Difference unknown: Tabitha wrote 25 more words than Sasha. If Sasha wrote 85 words, how many words did Tabitha write?</p> <p>Smaller/lesser unknown: Tabitha wrote 110 words in her essay. Sasha wrote 25 words fewer than Tabitha. How many words did Sasha write?</p>
Change (Join; Separate) An amount that increases or decreases	$ST +/- C = E$ (start +/- change = end)	<p>End (increase) unknown: Jorge had \$52. Then, he earned \$16 babysitting. How much money does Jorge have now?</p> <p>Start (decrease) unknown: Jorge had \$68. Now, Jorge has \$62. How much money did Jorge earn babysitting?</p>	<p>Multiple changes: Jorge had \$78. He stopped and bought a pair of shoes for \$42 and then he spent \$12 at the grocery. How much money does Jorge have now?</p> <p>Start (increase) unknown: Jorge has some money, and then he earned \$16 for babysitting. Now, Jorge has \$68. How much money did he have to start with?</p> <p>Start (decrease) unknown: Jorge had some money. Then, he spent \$29 at the ballpark. How much money does Jorge have now?</p> <p>Multiple changes: Jorge had \$52 but spent some money when he went to the ballpark. Now, Jorge has \$23. How much did Jorge spend at the ballpark?</p>

Schema and Definition	Graphic Organizers	Examples	Variations
Equal Groups (N/ary) A number of equal sets or units	 $\square \times \circleddash = \triangle$ (product) (number/ units)	<p>Product unknown: Maria bought 5 cartons of eggs with 12 eggs in each carton. How many eggs did Maria buy?</p> <p>Groups unknown: Maria bought 60 eggs. The eggs were sold in cartons with 12 eggs each. How many cartons of eggs did Maria buy?</p>	<p>Number unknown: Maria bought 5 cartons of eggs for a total of 60 eggs. How many eggs were in each carton?</p> <p>With rate: Maria bought 5 cartons of eggs. Each carton cost \$2.95. How much did Maria spend on eggs?</p>
Comparison One set as a multiple or part of another set	 $\square \times \circleddash = \triangle$ (product) (multiplier/ part) (set)	<p>Product unknown: Malik picked 7 flowers. Danica picked 3 times as many flowers. How many flowers did Danica pick?</p> <p>Set unknown: Danica picked 3 times as many flowers as Malik. If Danica picked 21 flowers, how many flowers did Malik pick?</p>	<p>Times unknown: Malik picked 7 flowers. Danica picked 21 flowers. How many more flowers did Danica pick?</p> <p>With fraction: Malik picked 25 red and yellow flowers. If 1/5 of the flowers were yellow, how many were red?</p>
Proportions		<p>Subject unknown: Sally typed 56 words in 2 minutes. How many words could Sally type in 7 minutes?</p> <p>Object unknown: Sally typed 56 words in 2 minutes. How many minutes would it take Sally to type 192 words?</p>	<p>With percentage: Watson received an 80% on his science quiz. If the test had 40 questions, how many questions did Watson answer correctly?</p> <p>With unit rate: Paula bought 5 boxes of markers. She spent \$9.75. What is the price of one box of markers?</p>
		<p>Base unknown: Justin baked cookies and brownies. The ratio of cookies to brownies was 3:5. If he baked 15 cookies, how many brownies did he bake?</p>	<p>Compared unknown: Justin baked cookies and brownies. The ratio of cookies to brownies was 3:5. If he baked 25 brownies, how many cookies did he bake?</p>

Material collected from: Jitendra, DiPipi, & Perron-Jones, 2002; Jitendra & Star, 2011; Jitendra & Deatline-Buchman, 2005; Xin & Zhang, 2009.

Van de Walle et al., 2009; Van de Walle et al., 2013; Xin, Jitendra, & Deatline-Buchman, 2005; Xin &