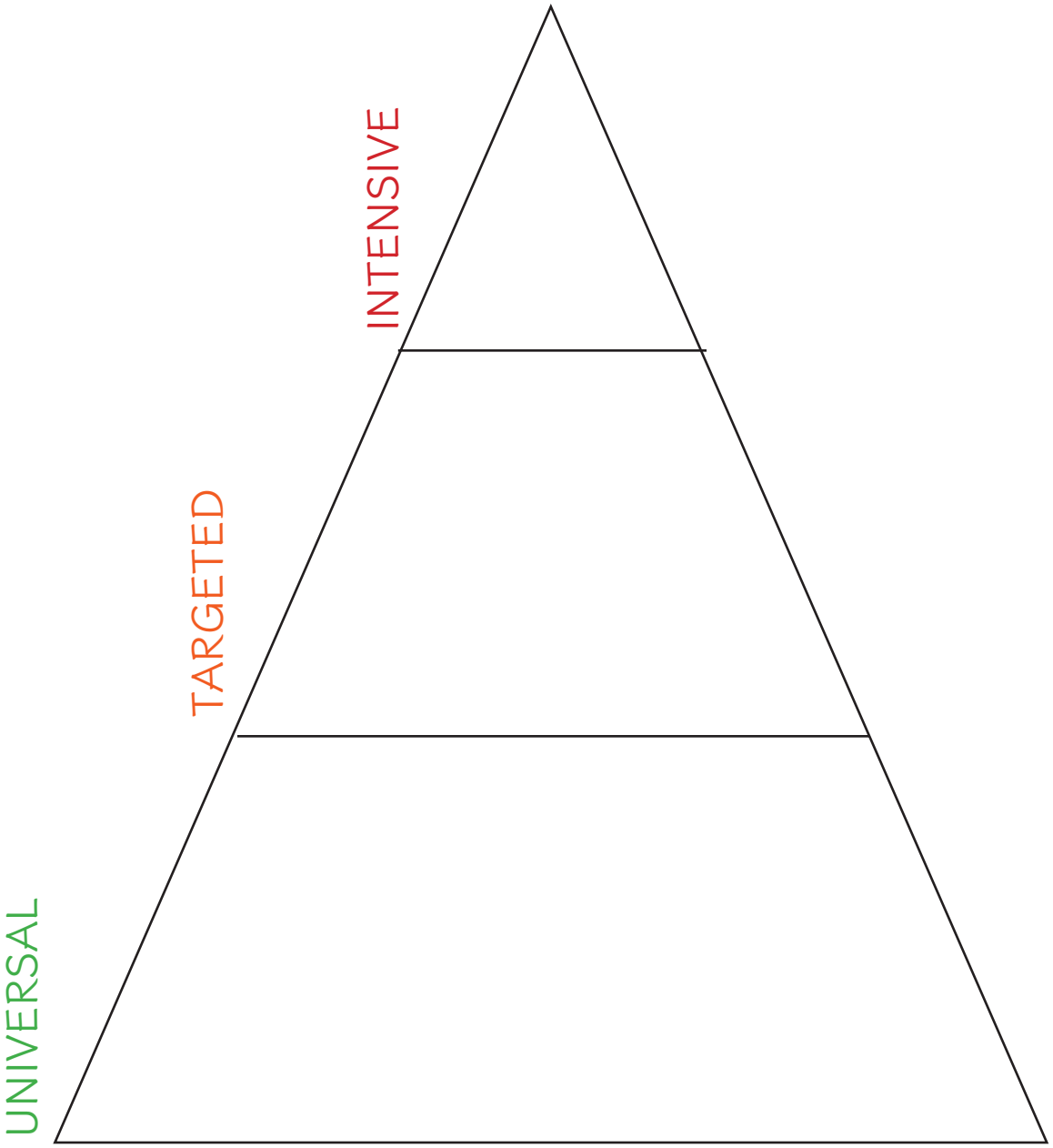
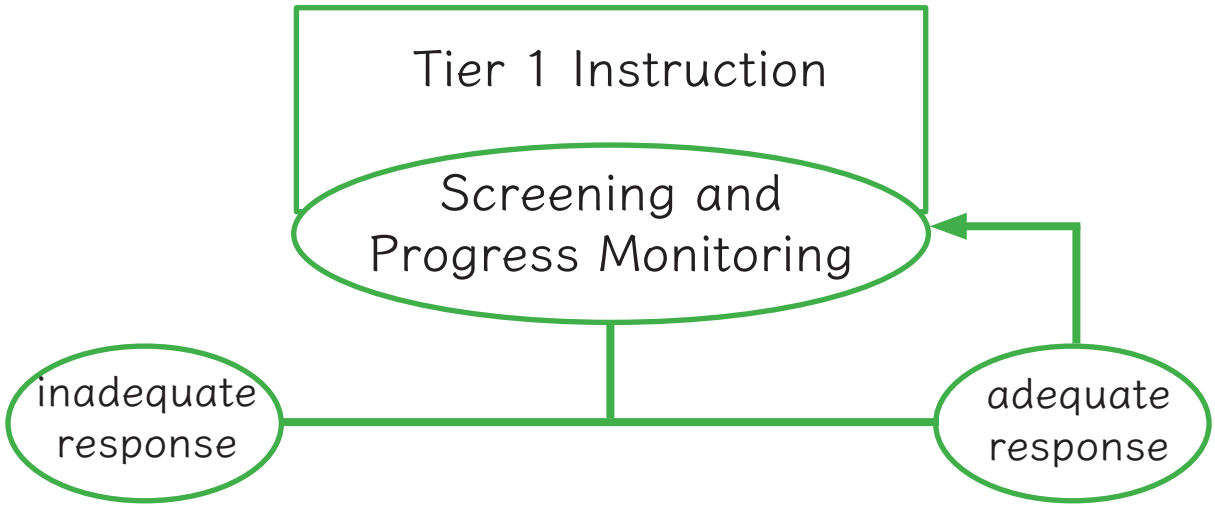
Teaching Math in Middle School

Ketterlin-Geller, Powell, Chard, & Perry (2019)

Sarah R. Powell, Ph.D.
srpowell@utexas.edu
@sarahpowellhd
www.sarahpowellphd.com

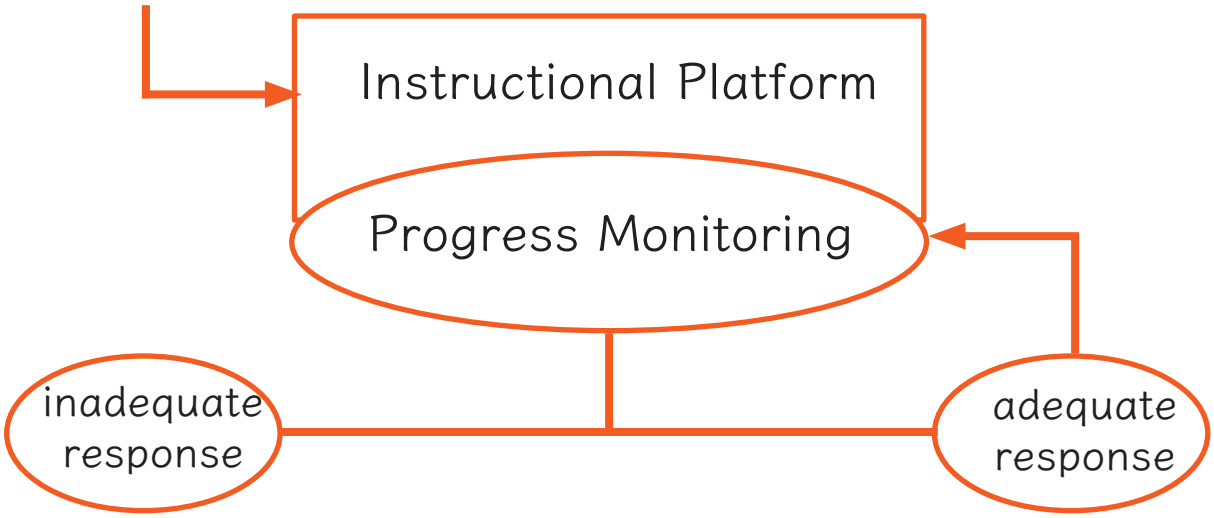




Tier 1 Instruction:

Screening and
Progress Monitoring:

Decision Making:

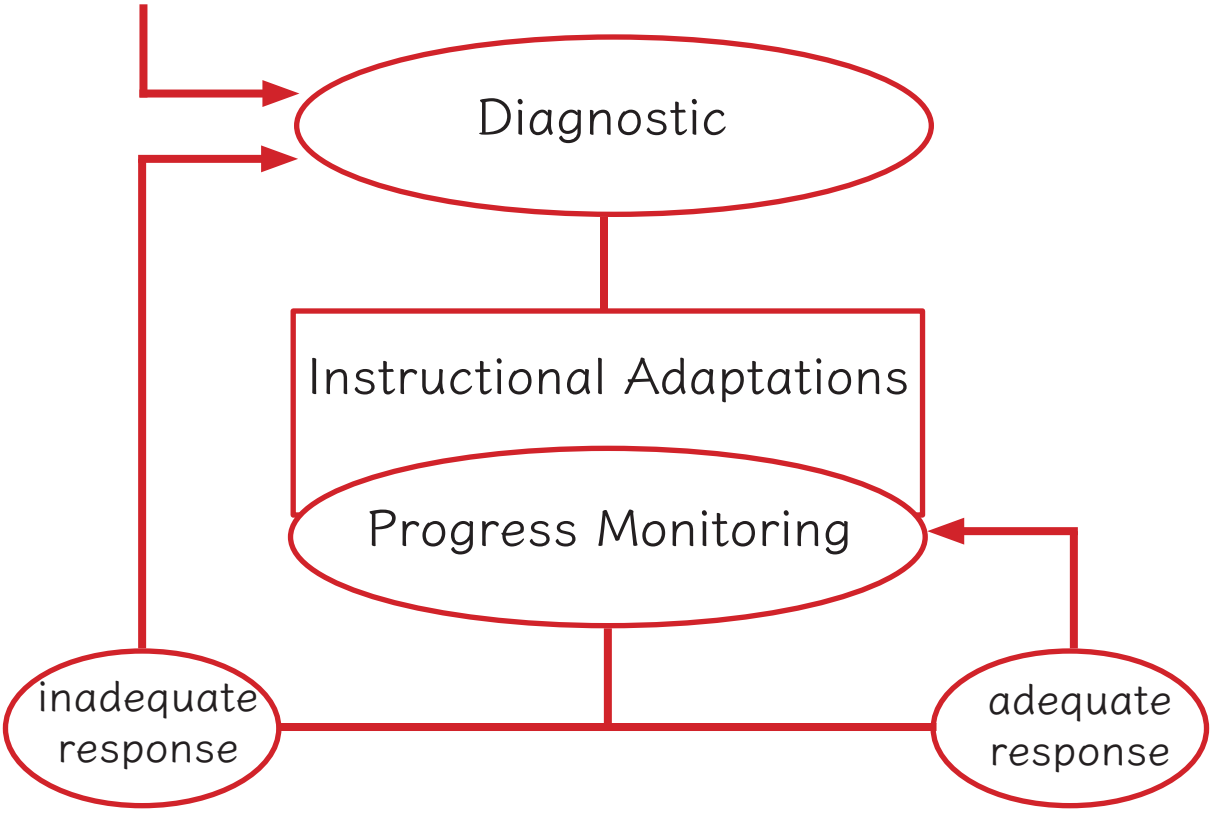


Instructional Platform:

Progress Monitoring:

Decision Making:

Chapter 2:
INTENSIVE



Diagnostic:

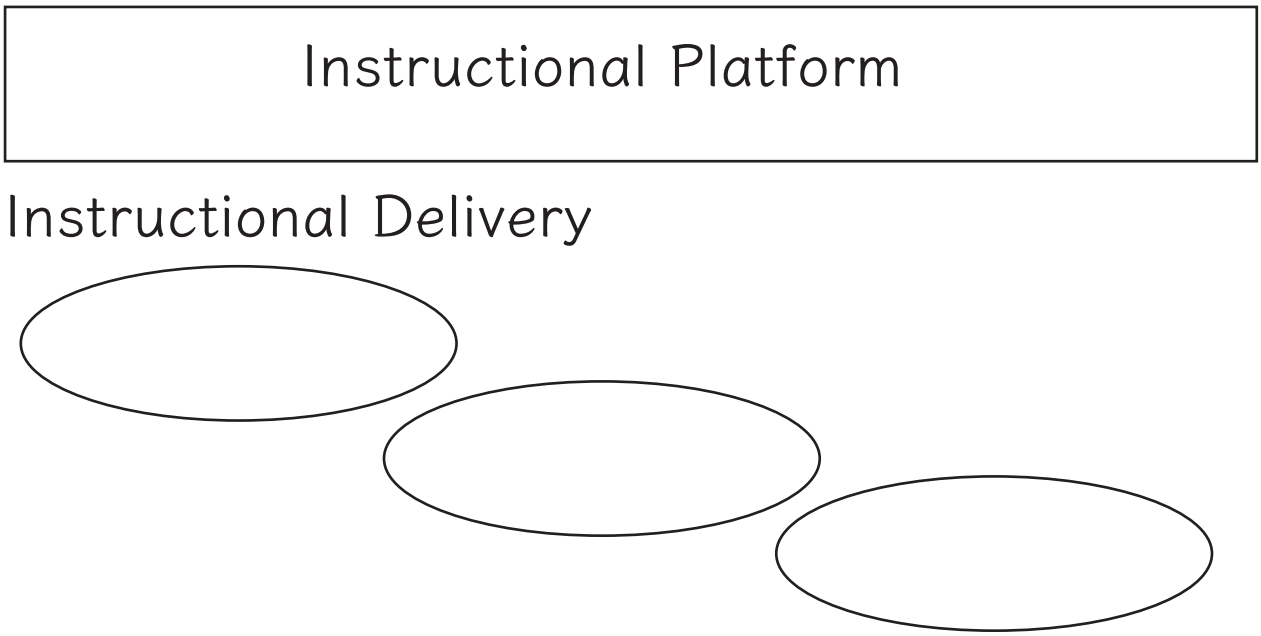
Instructional Adaptations:

Progress Monitoring:

Decision Making:

Chapter 3: Differentiation, Accommodation, and Modification

Chapter 5: Evidence-Based Practices


Instructional Platform
Instructional Delivery
Instructional Strategies

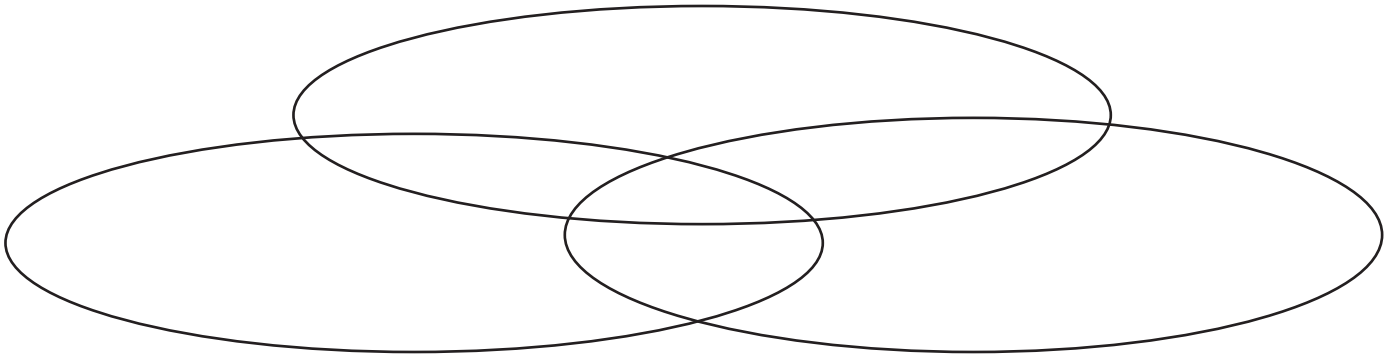
Chapter 5: Explicit Instruction

MODELING

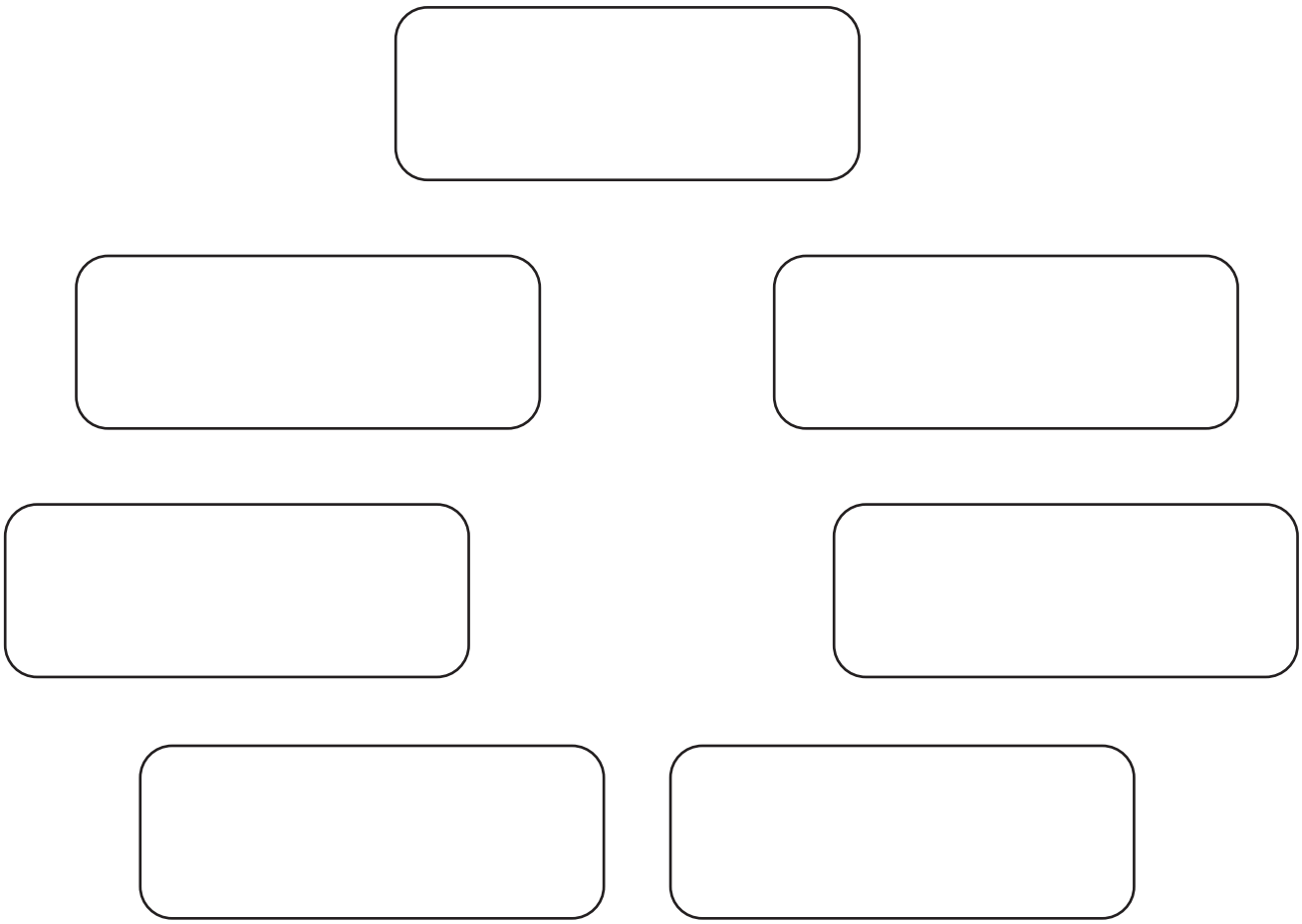
PRACTICE

SUPPORTS

Instead of that...	Say this...



Chapter 5: Fluency



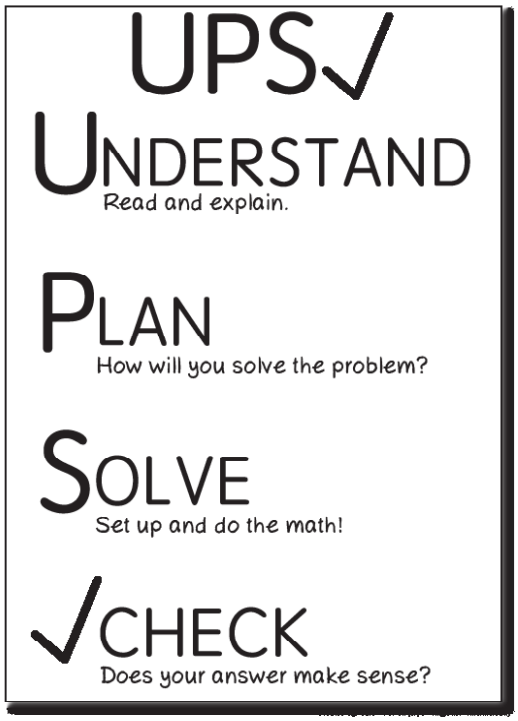
Teaching Problem Solving

SOLVE

Study the problem.
Organize the facts.
Line up the plan.
Verify the plan with computation.
Examine the answer.

R-CUBES

Read the problem.
Circle key numbers.
Underline the question.
Box action words.
Evaluate steps.
Solve and check.



Chapter 6: Additive Word Problems

A. Ali delivered 12 boxes of cookies on Friday and 25 boxes of cookies on Saturday. How many boxes of cookies did Ali deliver?	B. In March and April, it rained a total of 11.4 inches. If it rained 3.9 inches in March, how many inches did it rain in April?
C. Audrey has 162 wooden beads and 95 glass beads. What is the difference between Audrey's wooden beads and glass beads?	D. Damian's dog eats 9 1/2 cups of dog food each week. Monte's dog eats 4 1/4 cups less each week than Damian's dog. How much does Monte's dog eat in a week?

E.
A plant was 3 3/4 inches tall at the beginning of June. By the end of July, the plant was 9 1/8 inches tall. How many inches did the plant grow in 2 months?

F.
Martina has some money in her bank account. Then, she spent $135.69 and has a balance of -$24.80. How much money did Martina have to begin with?

Chapter 6: Multiplicative Word Problems

A. Lola baked 6 pies. For each pie, Lola used 5 apples. How many apples did Lola use?	B. Jane bought 112 light bulbs. The light bulbs come in packs of 4. How many packs of light bulbs did Jane buy?
C. Enrique has 2 times as many pencils as Ava. Ava has 6 pencils. How many pencils does Enrique have?	D. Susan has 7 times as many books as Mo. Mo has 18 books. How many books Susan has?

E.
The number of blueberry muffins that a baker makes each day is 40% of the total number of muffins she makes. On Monday, the baker makes 36 blueberry muffins. What is the total number of muffins that the baker makes on Monday?

F.
Sara buys a sweater at a department store. The sweater costs $30. The store is having a 25% off sale on everything in the store. Enter the amount of money, in dollars, Sara saves from the sale. Do not consider the sales tax.

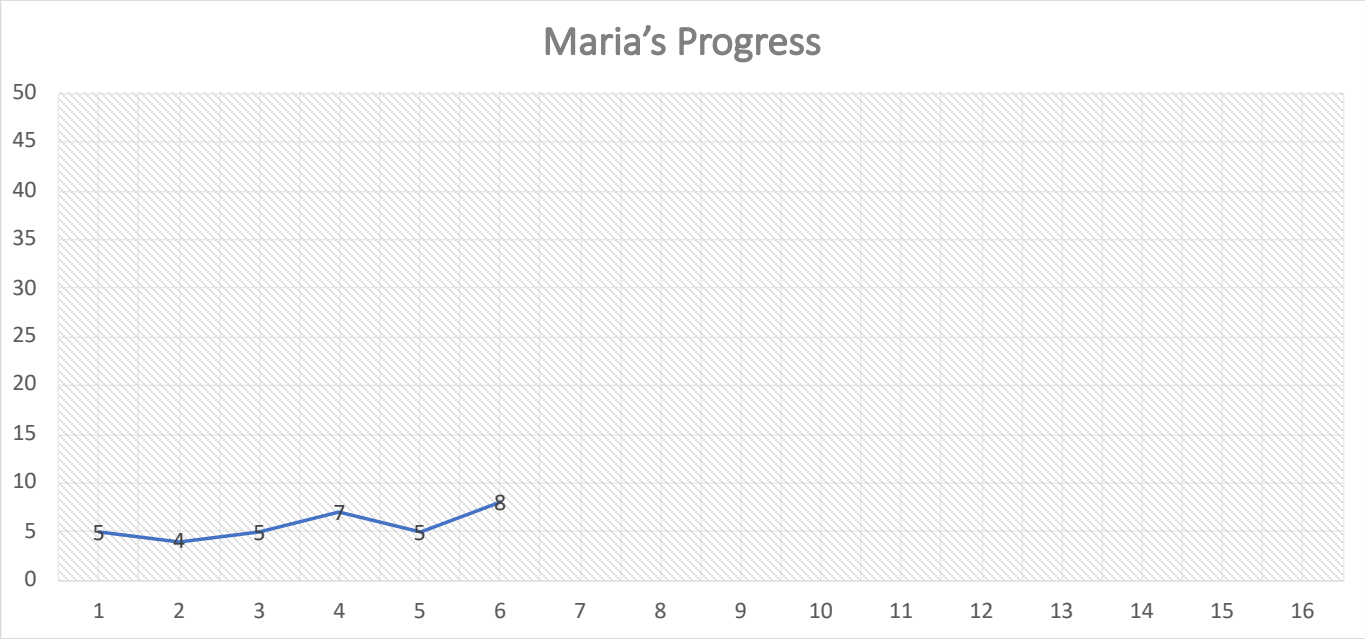
Chapter 7: Designing Interventions

Chapter 8: Implementing Interventions

Chapter 12: Progress Monitoring

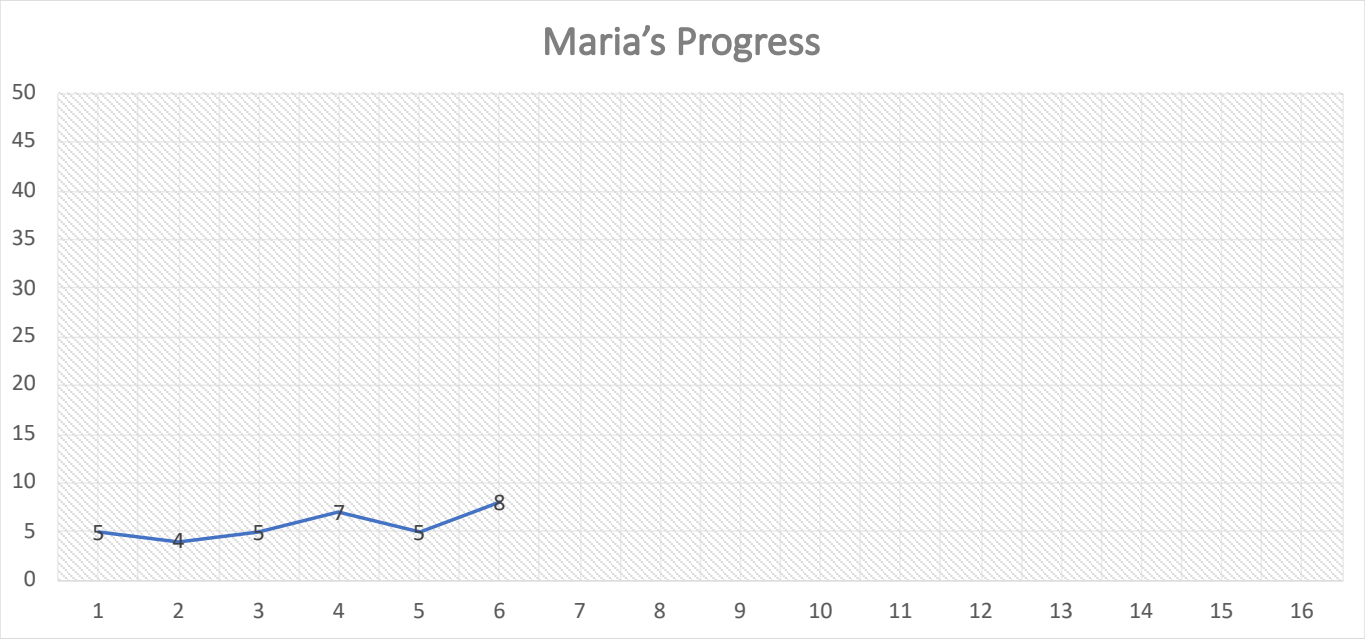
Goal Setting: Benchmark

1. Identify appropriate grade-level benchmark
2. Mark benchmark on student graph with an X
3. Draw goal-line from baseline progress monitoring scores to X



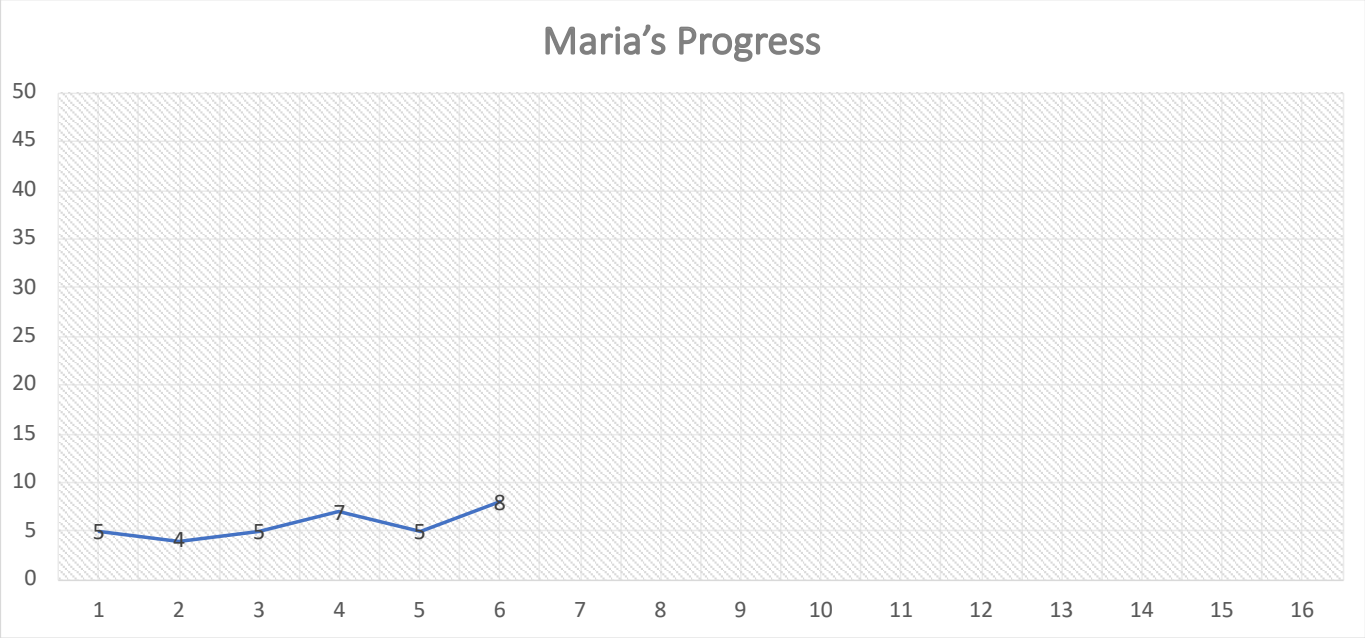
Goal Setting: Slope (Rate of Improvement)

1. Locate slope (i.e., rate of improvement – ROI)
2. Multiply ROI by number of weeks left in intervention
3. Add to baseline of progress monitoring scores
4. Mark goal on student graph with an X
5. Draw goal-line from baseline progress monitoring scores to X



Goal Setting: Intra-Individual Framework

1. Identify student's slope
2. Multiply slope by 1.5
3. Multiply by number of weeks until end of intervention
4. Add to student's baseline score
5. Mark goal on student graph with an X
6. Draw goal-line from baseline progress monitoring scores to X



Determining Response

Four most recent, consecutive scores

Trendline

Chapter 15: Readiness Checklist - Campus Administration

	Is this practice, action, or belief already established?	**If yes, what is working well? What changes could be made to improve this practice, action, or belief?**	**If no, what are the current conditions that exist? What is needed to change this practice, action, or belief?**
There is campus-level support at the highest levels, including agreement to adopt an MTSS model and allocate required resources.			
There is an understanding of and commitment to a long-term change process (3 or more years).			
There is long-term commitment of resources for administering assessments and implementing tiered instructional support.			
The district leadership team has a basic level of knowledge of the research related to RtI and the desire to learn more.			
There is expertise at the district- and campus-level with respect to research-based practices for academic success and positive behavioral outcomes.			

Chapter 15: Readiness Checklist - MTSS Team

	Is this practice, action, or belief already established?	**If yes, what is working well? What changes could be made to improve this practice, action, or belief?**	**If no, what are the current conditions that exist? What is needed to change this practice, action, or belief?**
There is campus-wide commitment to distributed leadership.			
Key stakeholders* are willing to work together.			
There is a content specialist who is communicative and considered a leader on campus.			
There is a data specialist who is communicative and considered a leader on campus.			
There is someone who could serve as the MTSS coordinator who is communicative and considered a leader on campus.			
There is a common planning time for educators to make instructional plans and review assessment data.			

Chapter 15: Readiness Checklist - Assessment

	Is this practice, action, or belief already established?	**If yes, what is working well? What changes could be made to improve this practice, action, or belief?**	**If no, what are the current conditions that exist? What is needed to change this practice, action, or belief?**
We administer a universal screener in mathematics to all students.			
We administer diagnostic assessments to students who are struggling document their strengths and areas of improvement.			
We monitor progress of students who are struggling or at-risk for mathematics difficulties.			
We have structured conversations around assessment results to inform instructional decisions.			
We provide ongoing professional learning and growth opportunities for interpreting assessment results to guide instructional decisions.			
We have a data management system in place.			

Chapter 15: Readiness Checklist - Instruction

	Is this practice, action, or belief already established?	**If yes, what is working well? What changes could be made to improve this practice, action, or belief?**	**If no, what are the current conditions that exist? What is needed to change this practice, action, or belief?**
We use a research-validated Tier 1 instructional program in mathematics.			
We use (or are able to acquire) research-based supplemental intervention materials for Tier 2 support.			
We use (or are able to acquire) research-based supplemental intervention materials for Tier 3 support.			
We have highly trained educators to provide Tier 1 instruction with fidelity.			
We have highly trained educators to provide Tier 2 instruction with fidelity.			
We have highly trained educators to provide Tier 3 instruction with fidelity.			
We have systems in place to evaluate the fidelity of implementation of instruction in Tiers 1-3.			
We provide ongoing professional learning and growth opportunities for implementing evidence-based instructional practices.			
We provide ongoing professional learning and growth opportunities that focus on deepening teachers' content knowledge in mathematics.			

Chapter 15: Readiness Checklist - Professional Learning

	Is this practice, action, or belief already established?	**If yes, what is working well? What changes could be made to improve this practice, action, or belief?**	**If no, what are the current conditions that exist? What is needed to change this practice, action, or belief?**
Professional learning and growth opportunities exist for all staff and across all roles within the school community.			
Professional learning and growth opportunities include ongoing support such as coaching, peer feedback, or professional learning communities.			
Professional learning and growth opportunities are aligned with the goals of MTSS.			
All stakeholders believe in the value of professional learning and growth.			
Opportunities to learn about MTSS exist for parents and other stakeholders within the school community.			
Professional learning and growth opportunities address relevant aspects of implementing MTSS.			
Professional learning and growth opportunities focus on improving learning by supporting the needs of all students.			

MTSS: The First Four Years

	YEAR 1	YEAR 2	YEAR 3	YEAR 4
MTSS SET UP				
MTSS team	Select members for MTSS team; Determine personnel for delivery for Tier 1	Determine personnel for delivery of Tier 2	Determine personnel for delivery of Tier 3	
MTSS plan	Determine MTSS plan for middle school	Implement plan at Tier 1	Continue implementation of Tier 1; Implement plan at Tier 2	Continue implementation of Tiers 1 and 2; Implement plan at Tier 3
Scheduling	Determine whether time is devoted to math instruction at Tier 1	Schedule Tier 2 intervention time within school day	Schedule Tier 3 intervention time within school day	
Training	Train all staff on MTSS structure with a focus on Tier 1	Train all staff on MTSS structure at Tier 2	Train all staff on MTSS structure at Tier 3	
TIER 1				
Math screener	Choose screener	Implement screener		
Tier 1 math instruction	Review current evidence-based practices	Implement Tier 1 evidence-based practices with fidelity		
Math progress monitoring	Choose progress monitoring measure	Implement progress monitoring with "at-risk" students		
Decision making at Tier 1	Determine decision making process	Implement decision making at Tier 1		
TIER 2				
Tier 2 math instruction		Review and select evidence-based Tier 2 interventions	Implement Tier 2 interventions with fidelity	
Math progress monitoring		Determine whether additional progress monitoring measures are necessary for Tier 2	Implement progress monitoring with Tier 2 students	
Decision making at Tier 2		Determine decision making process	Implement decision making at Tier 2	
TIER 3				
Diagnostic assessments		Select appropriate math diagnostics	Pilot diagnostic assessments with select Tier 2 students	Implement diagnostic assessments with Tier 3 students
Tier 3 math instruction			Review and select evidence-based Tier 3 interventions	Implement Tier 3 interventions with fidelity; Make adaptations based on diagnostic data
Math progress monitoring				Implement progress monitoring with Tier 3 students
Decision making at Tier 3				Implement decision making at Tier 3