

Check-In

Data-Based Decision Making

January 26, 2023



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[@sarahpowellphd](https://www.instagram.com/sarahpowellphd)



Say hello.

Describe your favorite thing
about being a teacher.





When you see this icon, it's time to use the Chat Box.

Raise your Zoom hand at anytime.

Drop questions in the Chat Box at anytime.





Schedule for Today

November	Word-Problem Solving
January 12th	Fact Fluency Computational Fluency Mathematical Language
January	Elementary Check-in Data-Based Decision Making
January 20th	Secondary Check-in Data-Based Decision Making
February	Communities of Practice
March	Communities of Practice
April	Communities of Practice



Check-In



Instructional Platform

INSTRUCTIONAL DELIVERY

Explicit
instruction

Precise
language

Multiple
representations

INSTRUCTIONAL STRATEGIES

Fluency building

Problem solving
instruction



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



What math content have you
been modeling?

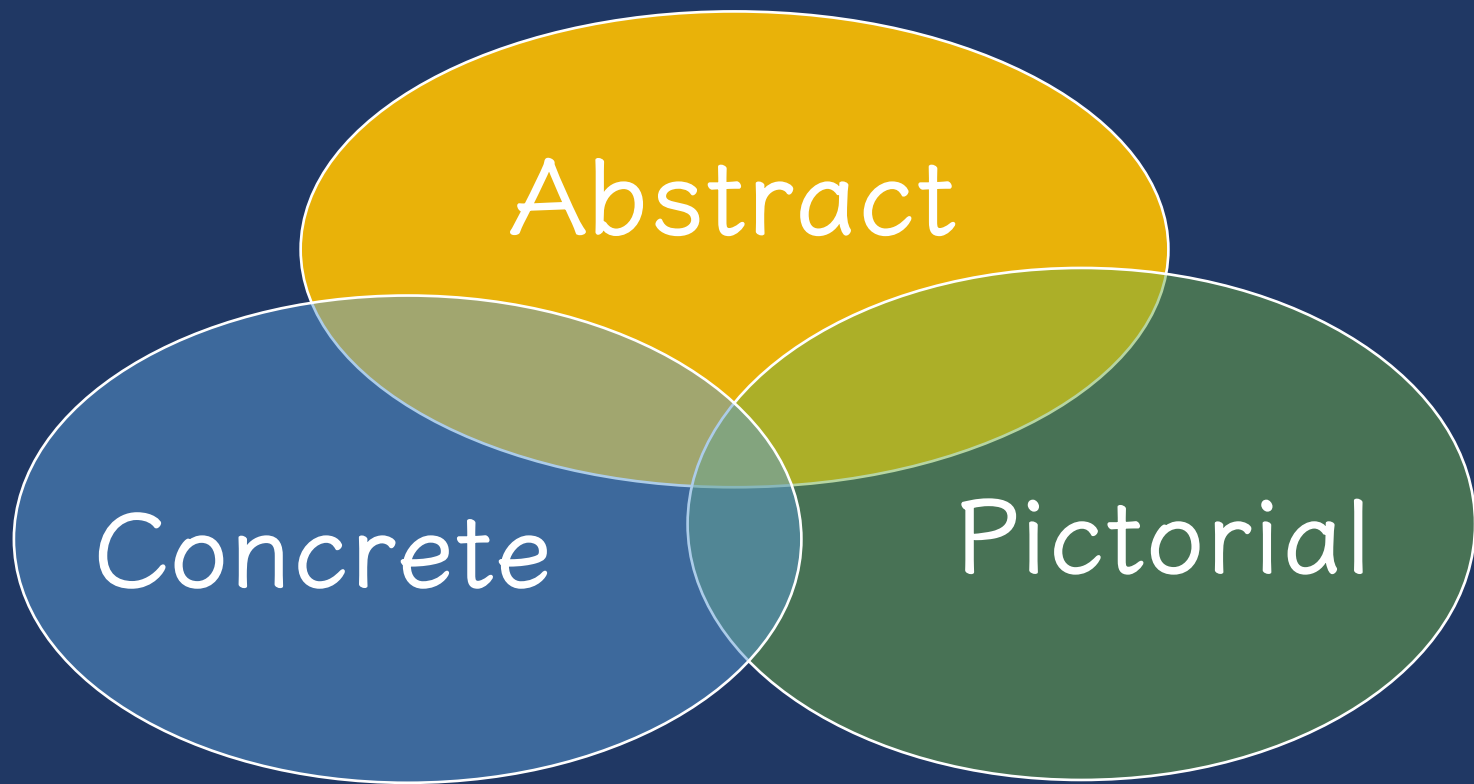
How have you been engaging
students in guided practice?

Use formal math language

Use terms precisely

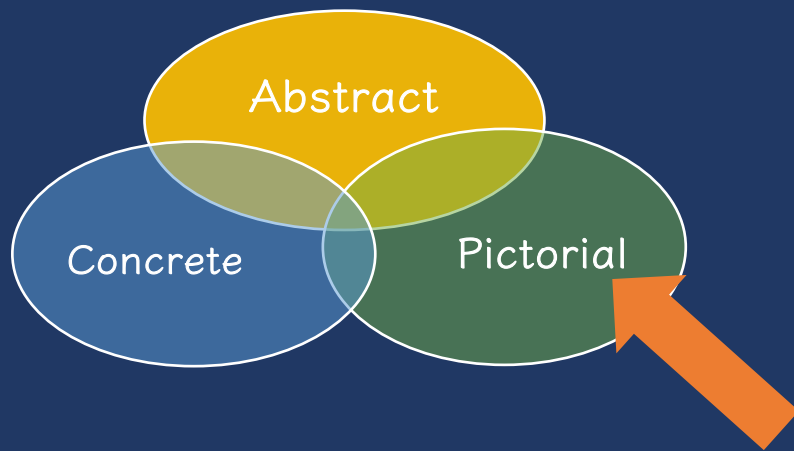


What's one way you support the math vocabulary of students?



What's a hands-on tool you use
in your teaching?

What's a virtual manipulative
you use?

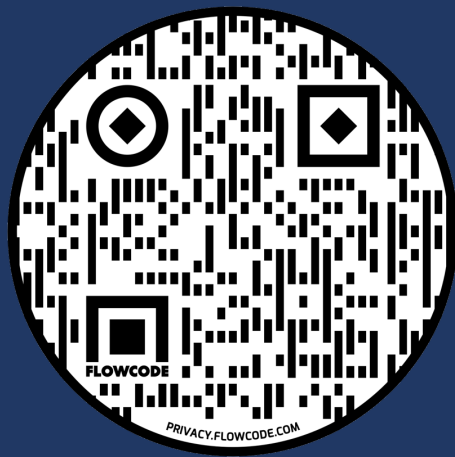


Virtual Manipulatives

Help students see and learn math using different tools!

Number & Operations	Place Value
Fractions & Decimals	Integers & Algebra
Geometry	Time & Money
Data & Probability	Extras

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 @sarahpowellphd



bit.ly/srpowell

Fractions & Decimals				
	fraction strips	fraction strips	fraction strips	Cuisenaire rods
	fraction circles	geoboard	geoboard	geoboard
two-color counters	decimal strips	place value disks	percentage strips	pattern blocks



Addition	Subtraction
Multiplication	Division

Counting

Comparing
numbers

Counting
coins

Telling
time

Identifying
equivalent
fractions

Knowing
multiples

Identifying
shapes

Knowing
formulas



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

$$\begin{array}{r} 5 \\ + 8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ - 4 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 56 \\ \div 8 \\ \hline \end{array}$$



Addition	Subtraction
Multiplication	Division



How do you support students with building fact fluency?

Partial Sums

A.

$$\begin{array}{r} 74 \\ + 18 \\ \hline 80 \\ + 12 \\ \hline 92 \end{array}$$

B.

$$\begin{array}{r} 725 \\ + 365 \\ \hline 1,000 \\ 80 \\ + 10 \\ \hline 1,090 \end{array}$$



Add Up

A.

$$\begin{array}{r} 62 \\ - 17 \\ \hline \end{array} \quad \begin{array}{r} 17 \\ 20 \\ 60 \\ \hline 62 \end{array} \quad \begin{array}{r} 3 \\ 40 \\ 2 \\ \hline 45 \end{array}$$

B.

$$\begin{array}{r} 305 \\ - 96 \\ \hline \end{array} \quad \begin{array}{r} 96 \\ 100 \\ 300 \\ \hline 305 \end{array} \quad \begin{array}{r} 4 \\ 200 \\ 5 \\ \hline 209 \end{array}$$



Area (Array)

A.

$$\begin{array}{r} 24 \\ \times 43 \\ \hline 800 \\ 160 \\ 60 \\ + 12 \\ \hline 1,032 \end{array}$$

20	4	
800	160	40
60	12	3

B.

$$\begin{array}{r} 132 \\ \times 53 \\ \hline 5000 \\ 1500 \\ 100 \\ 300 \\ 90 \\ + 6 \\ \hline 6996 \end{array}$$

100	30	2
5000	1500	100
300	90	6

Partial Quotients

A.
$$\begin{array}{r} 12 \overline{) 158} \\ \underline{- 120} \\ 38 \\ \underline{- 36} \\ 2 \end{array} \quad \begin{array}{l} 10 \\ + 3 \\ \hline 13 \text{ R } 2 \end{array}$$

B.
$$\begin{array}{r} 34 \overline{) 870} \\ \underline{- 680} \\ 290 \\ \underline{- 170} \\ 120 \\ \underline{- 102} \\ 18 \end{array} \quad \begin{array}{l} 20 \\ 5 \\ + 3 \\ \hline 28 \text{ R } 18 \end{array}$$



Addition	Subtraction
Multiplication	Division



How do you support students with building computational fluency?

Teach an attack strategy

Teach about schemas



Teach an attack strategy



Are you using an attack strategy? Which one? What are your successes?

Teach about schemas



How are you emphasizing the schemas?

Instructional Platform

INSTRUCTIONAL DELIVERY

Explicit
instruction

Precise
language

Multiple
representations

INSTRUCTIONAL STRATEGIES

Fluency building

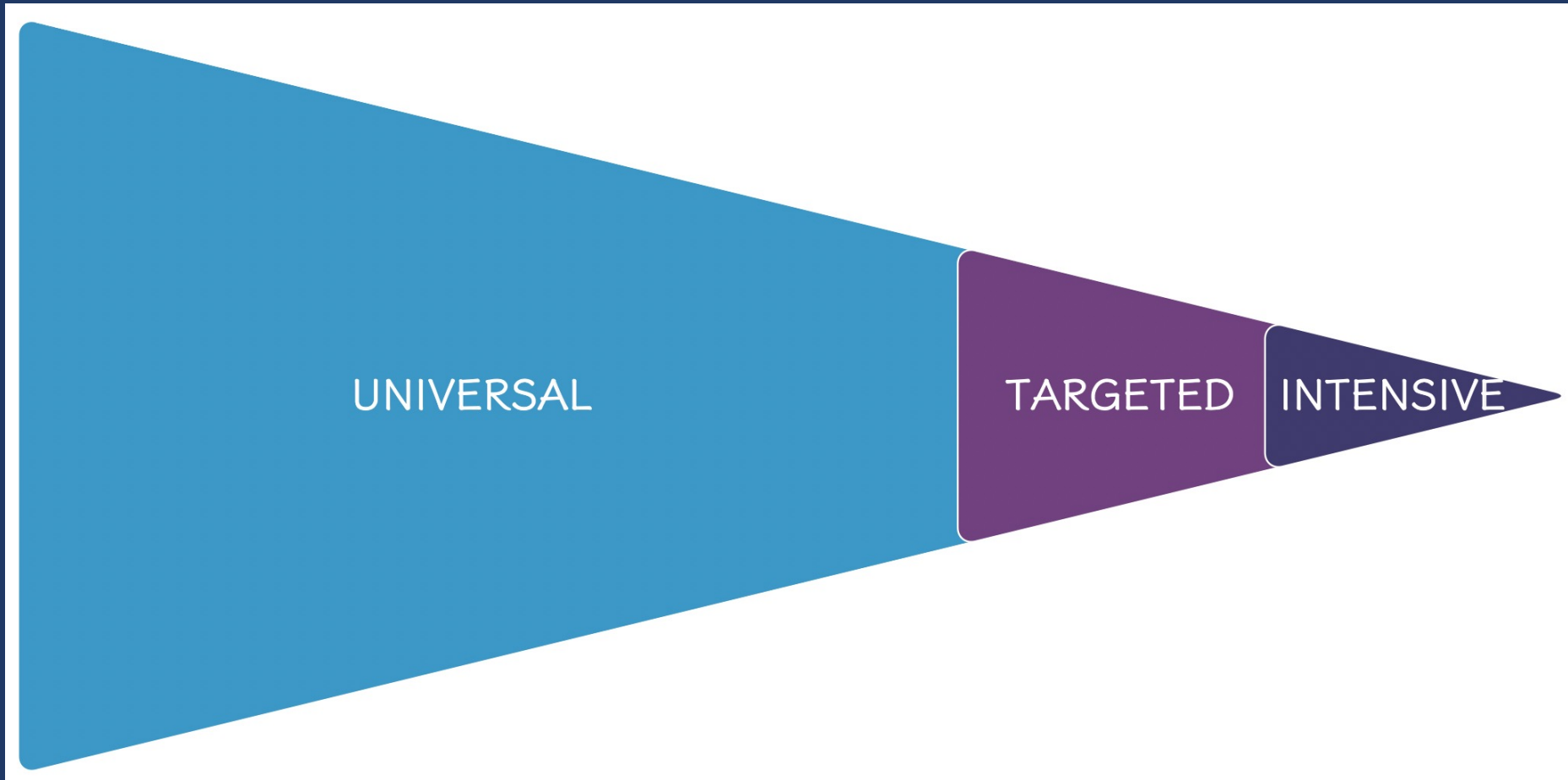
Problem solving
instruction



Data-Based Decision Making



Multi-Tiered Systems of Support (MTSS)



Also known as **Tier 1** or
primary prevention

Designed for all students

Occurs in general
education classroom

Almost all students
participate

~80% of students need
only universal intervention



UNIVERSAL

Almost 100% of students



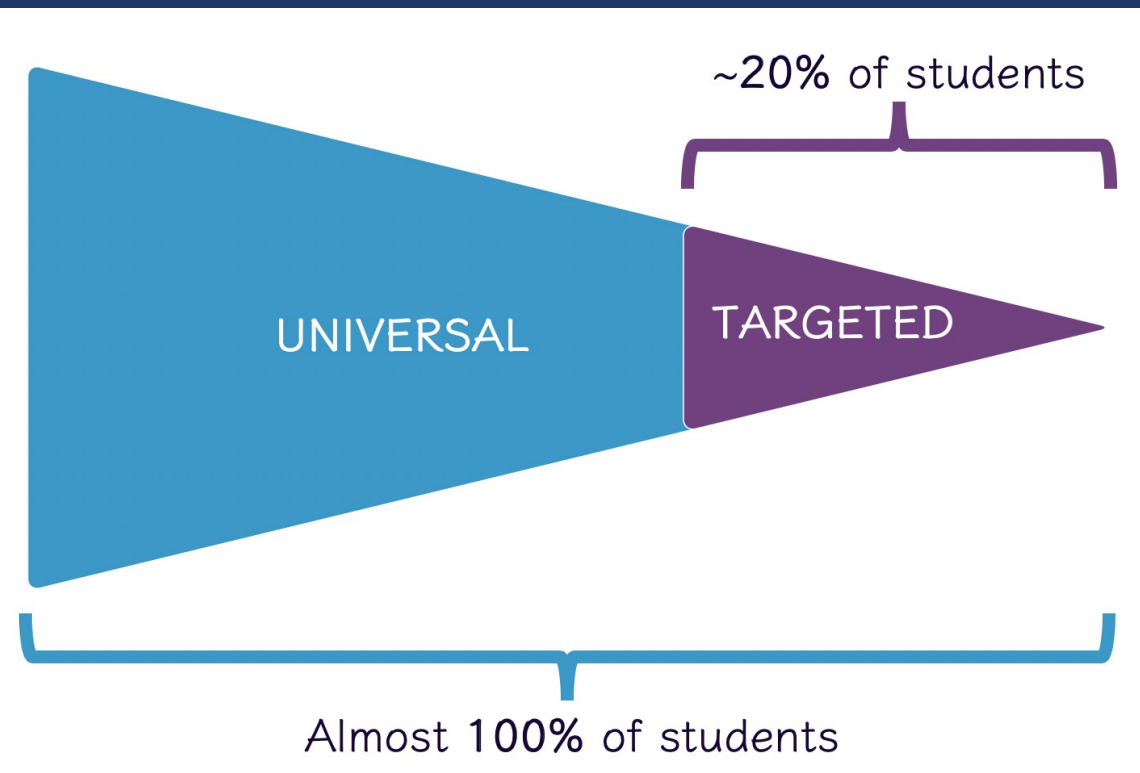
Also known as Tier 2 or
secondary prevention

Designed for students
experiencing difficulty in
academics or behavior

Can occur inside or
outside of the classroom

Provided in conjunction
with universal intervention

~20% of students require
targeted intervention

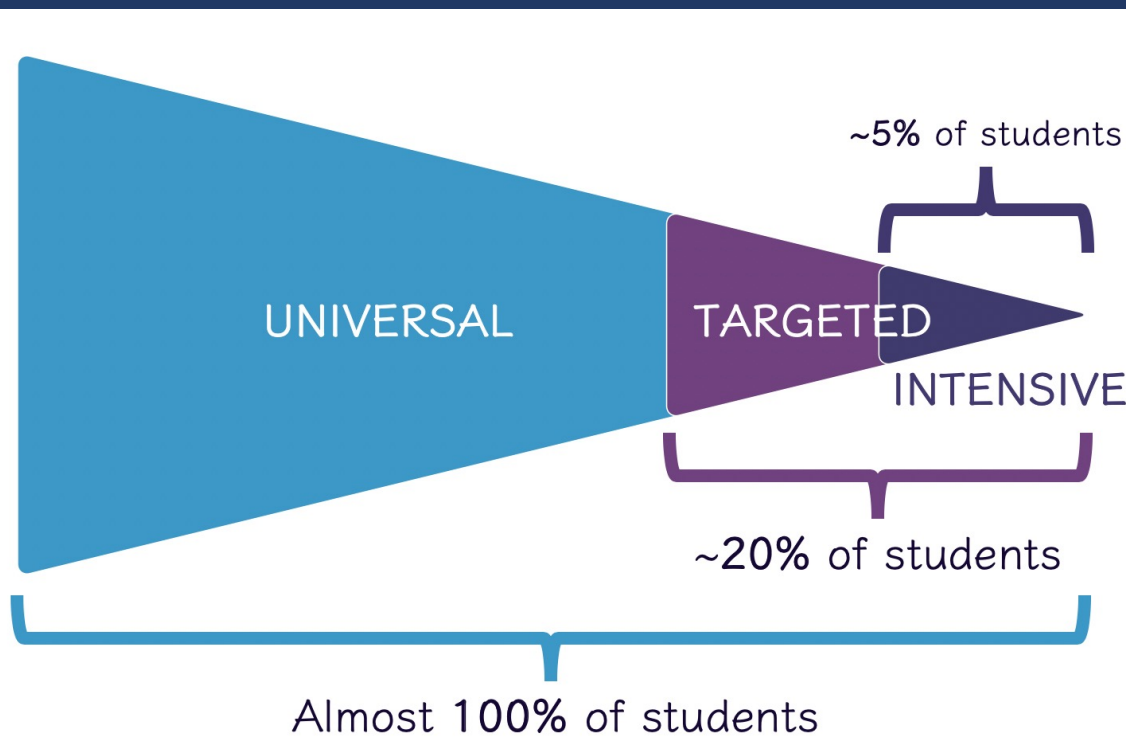


Also known as Tier 3 or tertiary prevention

Designed for students who demonstrate inadequate response to universal and targeted intervention

Occurs within or outside of special education

~5% or less of students require intensive intervention



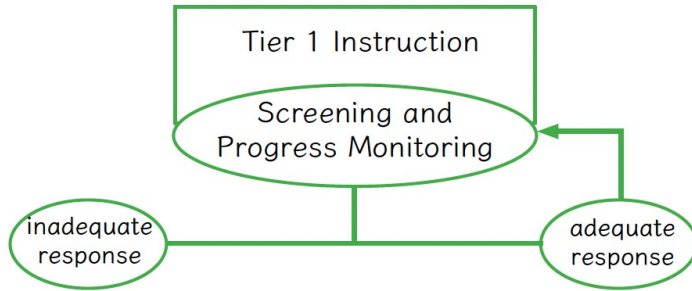


Describe the MTSS frameworks you have used or are familiar with.

What does your MTSS framework look like in math?



UNIVERSAL

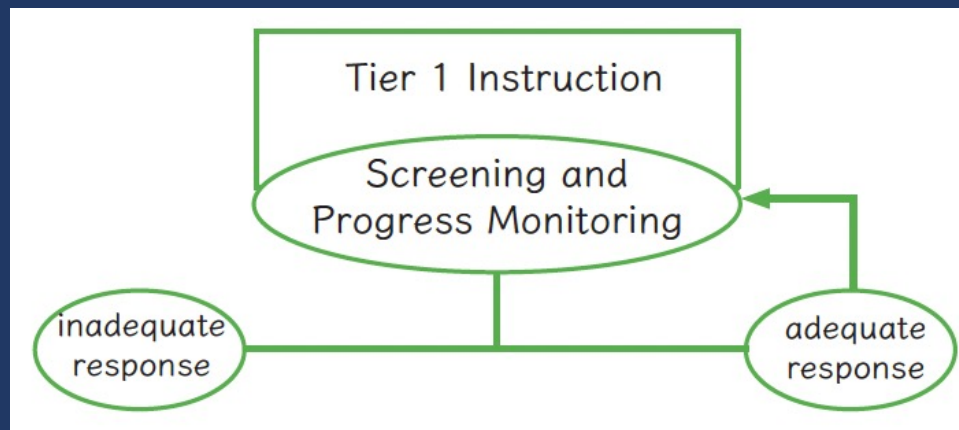


Tier 1 Instruction:

Screening and
Progress Monitoring:

Decision Making:





- Core instruction utilizes **evidence-based practices**
- All students **screened** (universal screener)
- Students scoring below a cut-score are suspected **at risk** for math difficulties
- Suspected **at-risk students** monitored for 6 to 10 weeks during primary prevention using **progress monitoring**

evidence-based practice



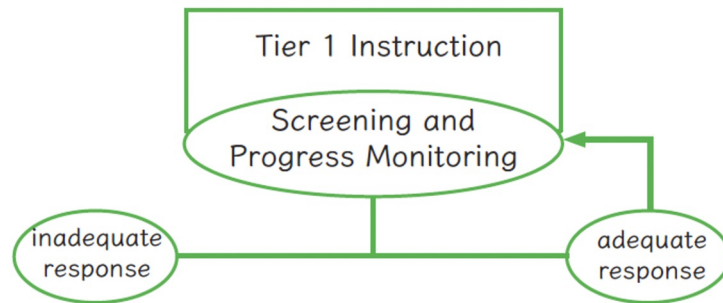
evidence-based intervention

evidence-based strategy

promising practice

~~no or negative
evidence~~





Tier 1 Instruction:

- Evidence-based practices

Screening and
Progress Monitoring:

Decision Making:

6	16	23	10	17
38	97	20	15	24
14	33	11	79	8
21	19	93	3	49
4	30	1		
28	7	2		

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Progress Monitoring 6 / Beginning Quantity Discrimination Sheet 1
Page 42

Acadience® Math / Computation Grade 4
Benchmark 1 / Form A

Total: _____

1. $\begin{array}{r} 527 \\ +320 \\ \hline \end{array}$	2. $\begin{array}{r} 4778 \\ +2242 \\ \hline \end{array}$	3. $8\frac{4}{5} - 6\frac{2}{5} =$	4. $\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$	5. $4\overline{)573}$
6. $\begin{array}{r} 197 \\ - 74 \\ \hline \end{array}$	7. $\frac{5}{8} + \frac{2}{8} =$	8. $\begin{array}{r} 7273 \\ - 387 \\ \hline \end{array}$	9. $\begin{array}{r} 19 \\ \times 11 \\ \hline \end{array}$	10. $9\frac{7}{12} - 1\frac{4}{12} =$
11. $8\overline{)642}$	12. $7\overline{)49}$	13. $\begin{array}{r} 99 \\ \times 72 \\ \hline \end{array}$	14. $\frac{1}{4} + \frac{2}{4} =$	15. $\begin{array}{r} 526 \\ \times 6 \\ \hline \end{array}$
16. $8\frac{9}{10} - 1\frac{5}{10} =$	17. $\frac{1}{3} + \frac{1}{3} =$	18. $\frac{9}{12}$		
21. $3\overline{)397}$	22. $\begin{array}{r} 65 \\ \times 23 \\ \hline \end{array}$	23. $\begin{array}{r} 4 \\ \times 4 \\ \hline \end{array}$		

Acadience® Math / Concepts and Applications
Grade 4 / Benchmark 1

Total: _____

1. Is the dotted line a line of symmetry for each shape? Write "yes" or "no" in the space provided below each shape.

2. Compare the number in Box 1 with the number in Box 2. Fill in the blank with > (greater than), = (equal to), or < (less than):

Box 1	>, =, <	Box 2
835		751
333		613
131		168

3. List three numbers that are multiples of 4: _____

4. Jake read 17 books over the summer that were nonfiction and 43 books that were fiction. His friend Ross read 38 books total. How many more books did Jake read than Ross? _____ books.

5. Compare the decimal in Box 1 with the decimal in Box 2. Fill in the blank with > (greater than), = (equal to), or < (less than):

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0.47		0.25
0.39		0.68
0.89		0.91

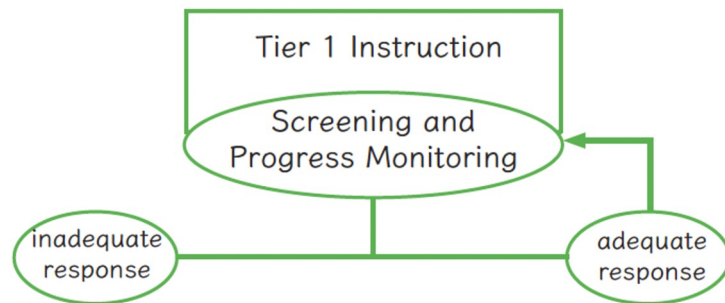
6. We rented a movie that was 2 hours and 15 minutes long. How many minutes total was the movie? _____ minutes.

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Concepts and Applications / G4 / Benchmark 1

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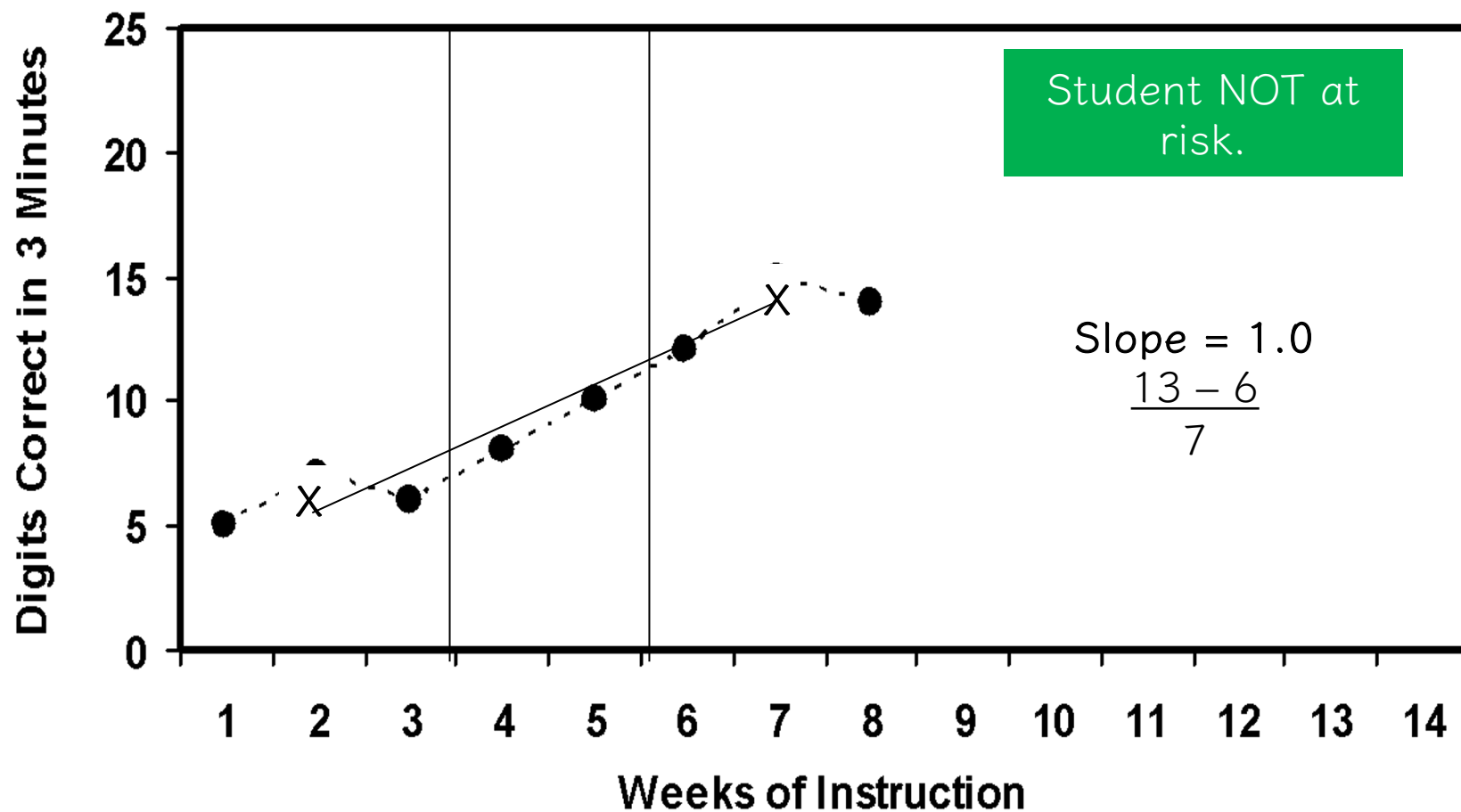
Tier 1 Instruction:

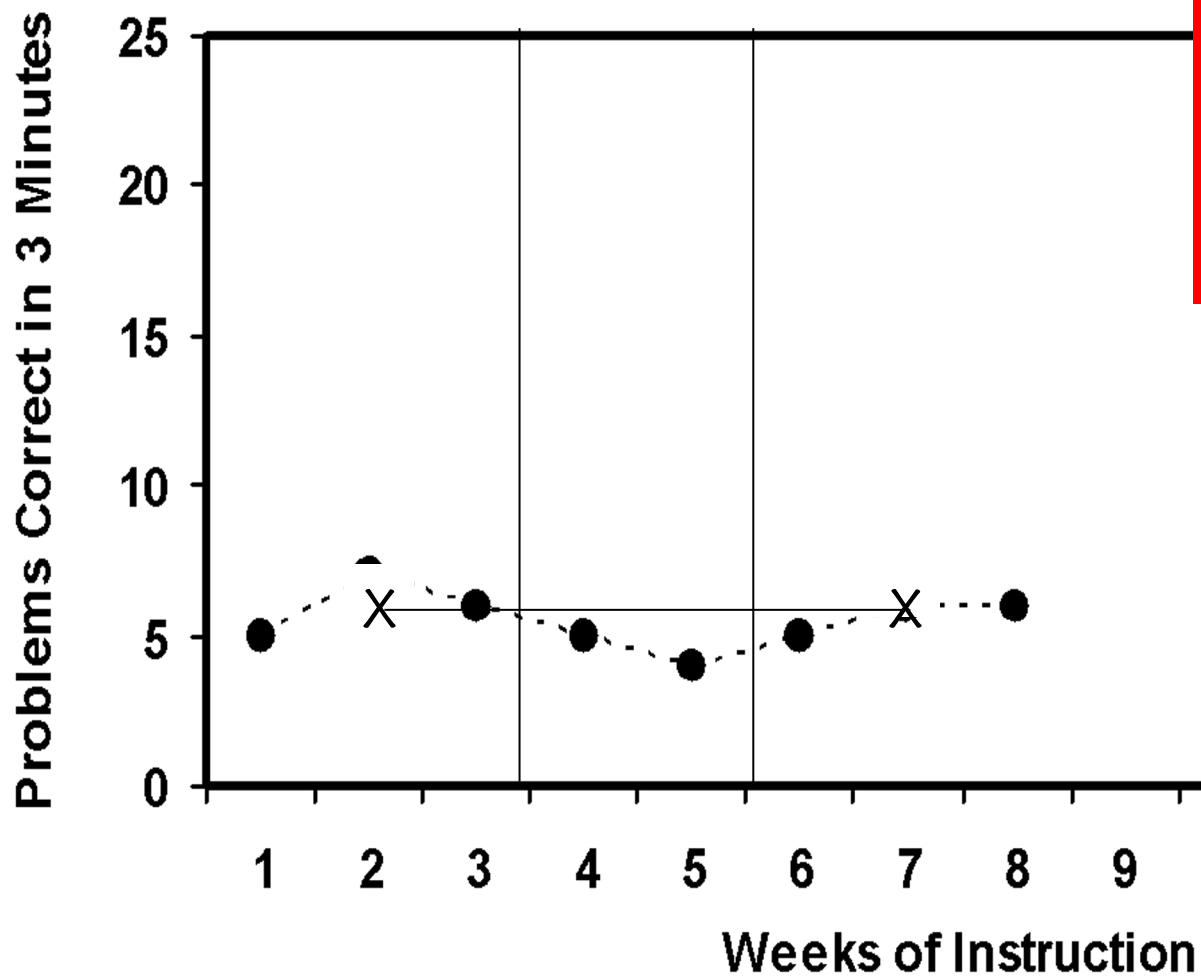
- Evidence-based practices

Screening and Progress Monitoring:

- Reliable measures with normative data
- Usually administered fall, winter, spring
- Reliable measures, administered regularly

Decision Making:



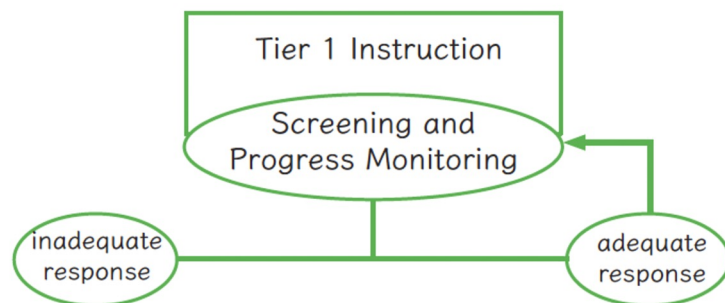


Student AT RISK.

Requires
additional
support!

$$\text{Slope} = 0.0$$
$$\frac{6 - 6}{7}$$





Tier 1 Instruction:

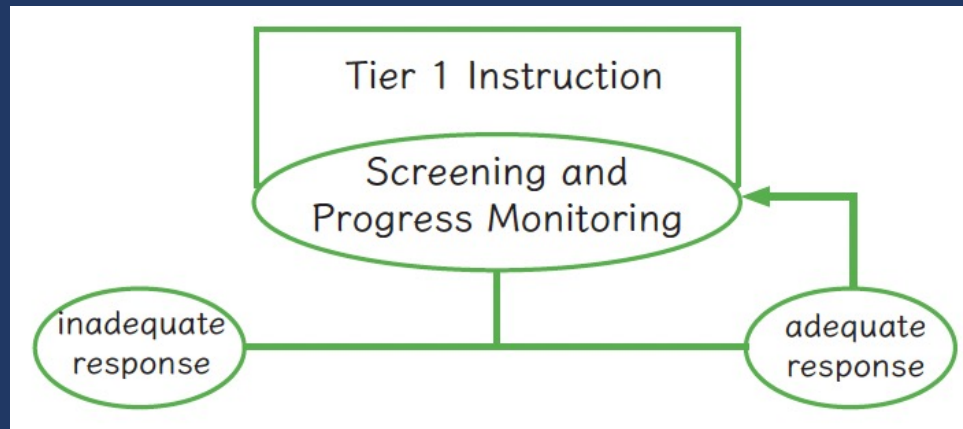
- Evidence-based practices

Screening and Progress Monitoring:

- Reliable measures with normative data
- Usually administered fall, winter, spring
- Reliable measures, administered regularly

Decision Making:

- After 6-10 weeks, student risk status is **confirmed or disconfirmed**

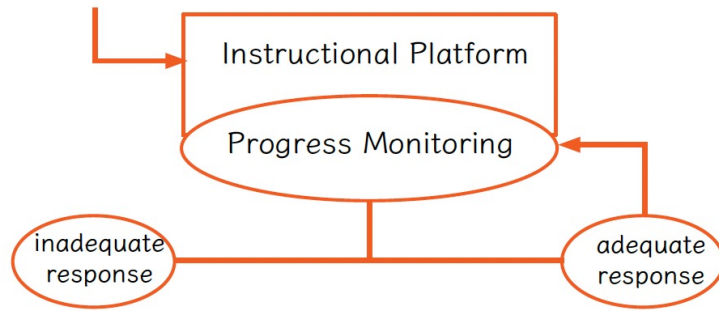


Describe your school's Tier 1 strengths.

Describe your school's Tier 1 opportunities for growth.



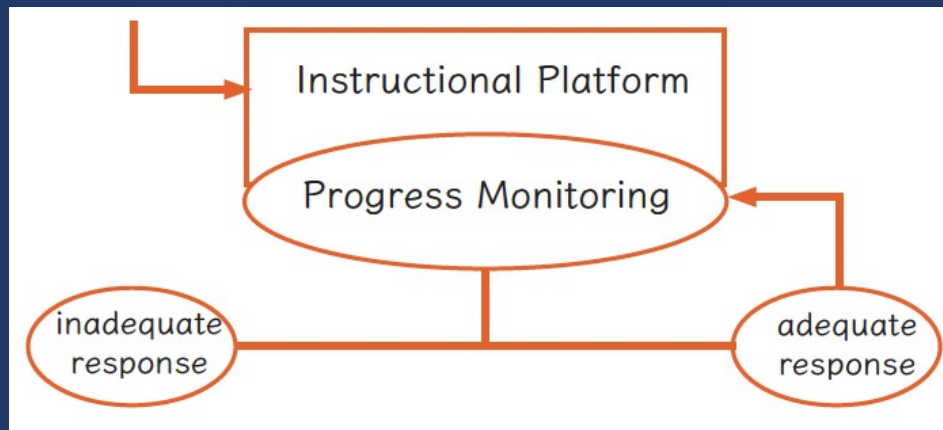
TARGETED



Instructional Platform:

Progress Monitoring:

Decision Making:



- Students are tutored in small groups using **evidence-based practices**
- Tutoring takes place three or four times a week
- Each tutoring session lasts 30 to 60 minutes
- Tutoring lasts 10 to 20 weeks
- Progress monitoring continues weekly

Instructional Platform

INSTRUCTIONAL DELIVERY

Explicit
instruction

Precise
language

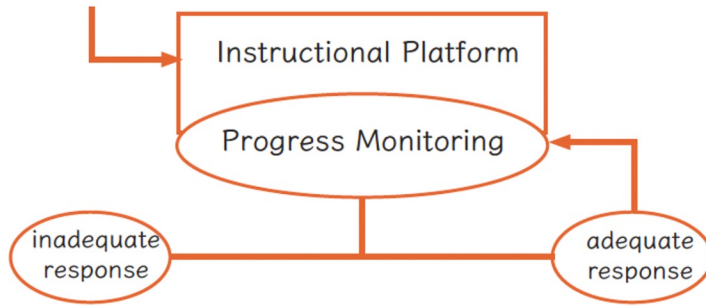
Multiple
representations

INSTRUCTIONAL STRATEGIES

Fluency building

Problem solving
instruction





Instructional Platform:

Explicit
instruction

Precise
language

Multiple
representations

Fluency
building

Problem
solving
instruction

Progress Monitoring:

Decision Making:

6	16	23	10	17
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4	30	1		
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Acadience® Math / Computation Grade 4
Benchmark 1 / Form A

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Acadience® Math / Concepts and Applications
Grade 4 / Benchmark 1

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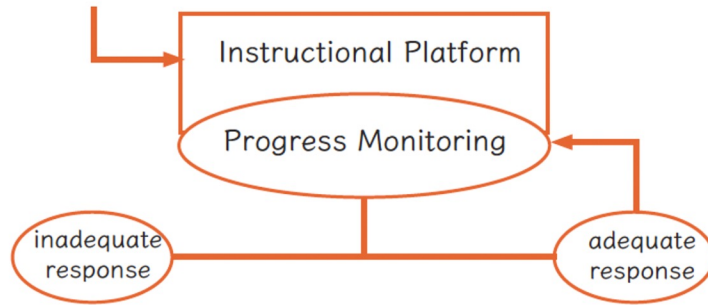
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6. We rented a movie that was 2 hours and 15 minutes long. How many minutes total was the movie? _____ minutes.





Instructional Platform:

Explicit instruction

Precise language

Multiple representations

Fluency building

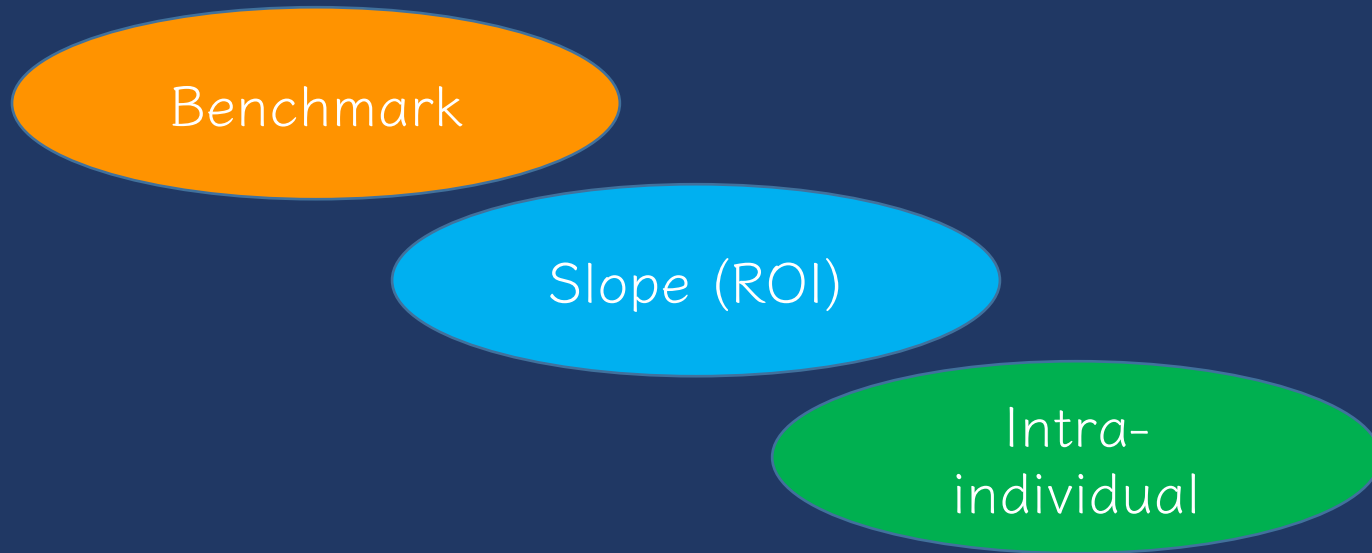
Problem solving instruction

Progress Monitoring:

- Reliable measures, administered regularly
- Efficient and easy to administer
- Skills assessed serve as indicators of general knowledge

Decision Making:

Setting Goals



Determining Response

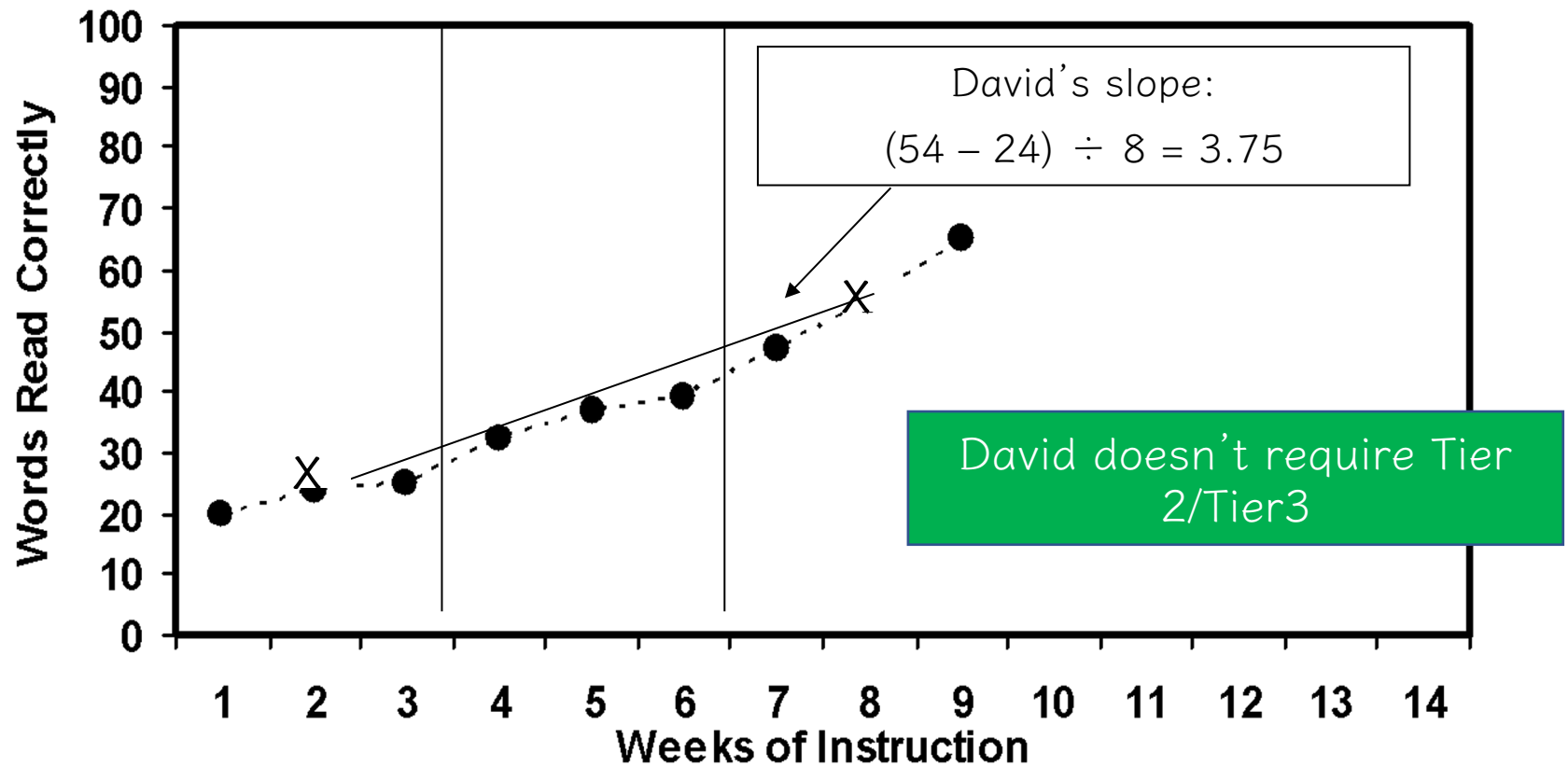
Four most recent, consecutive scores



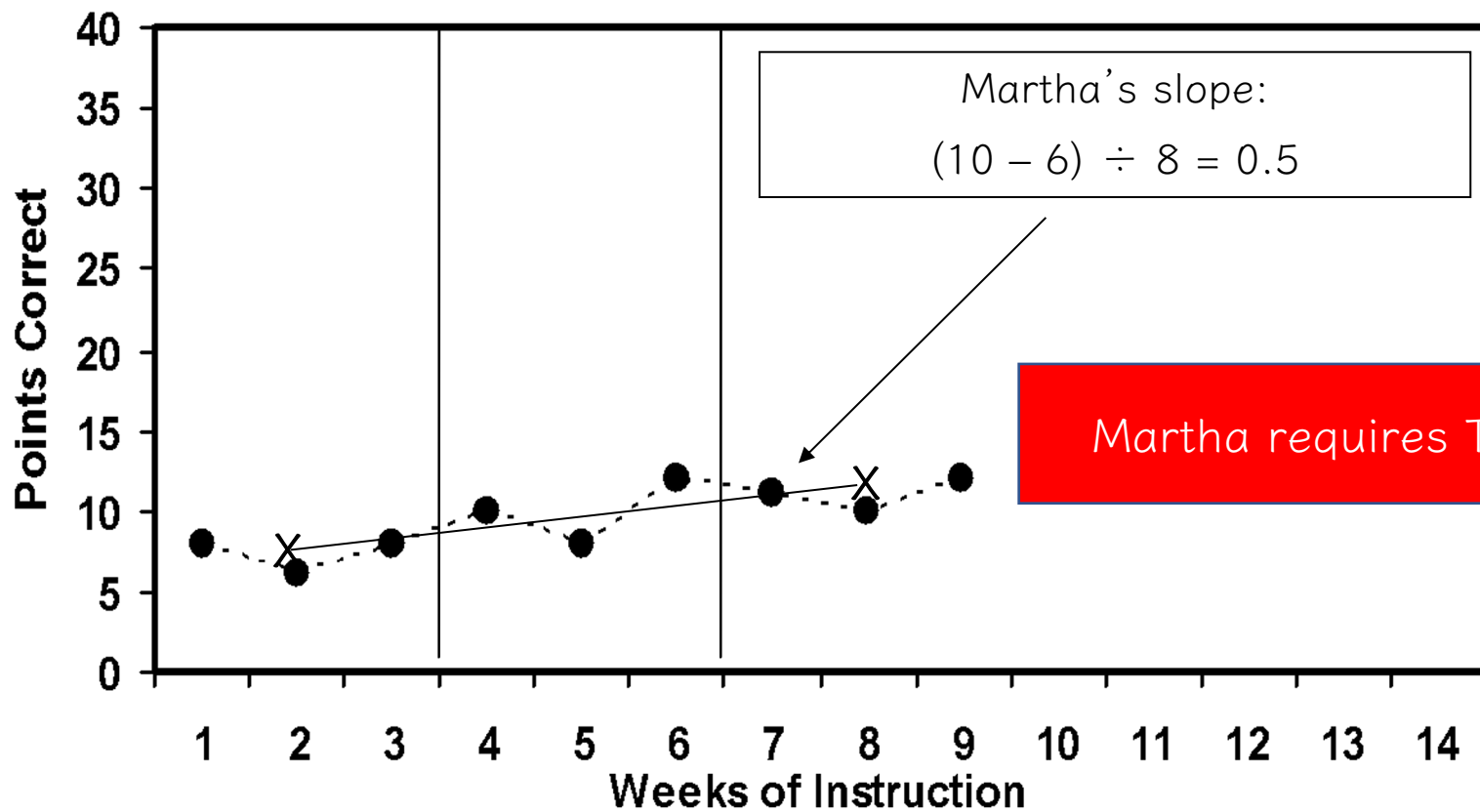
Trendline

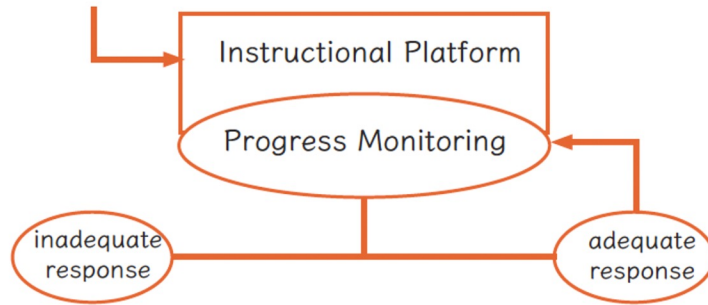


David



Martha





Instructional Platform:

Explicit instruction

Precise language

Multiple representations

Fluency building

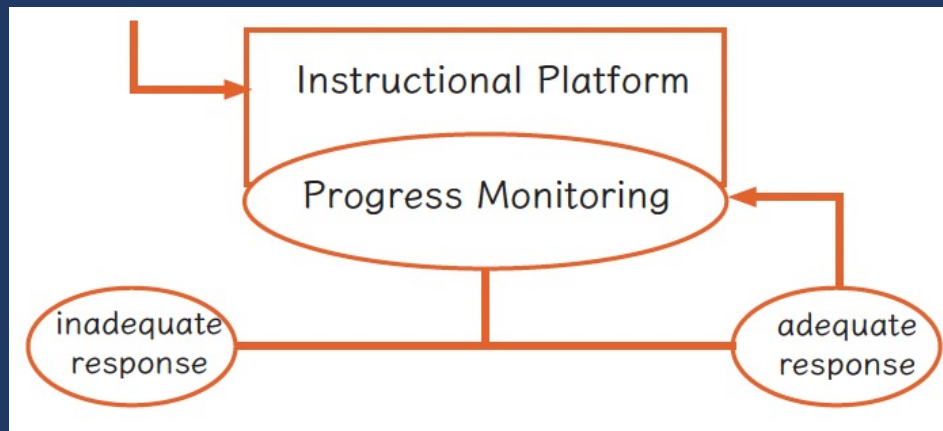
Problem solving instruction

Progress Monitoring:

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Decision Making:

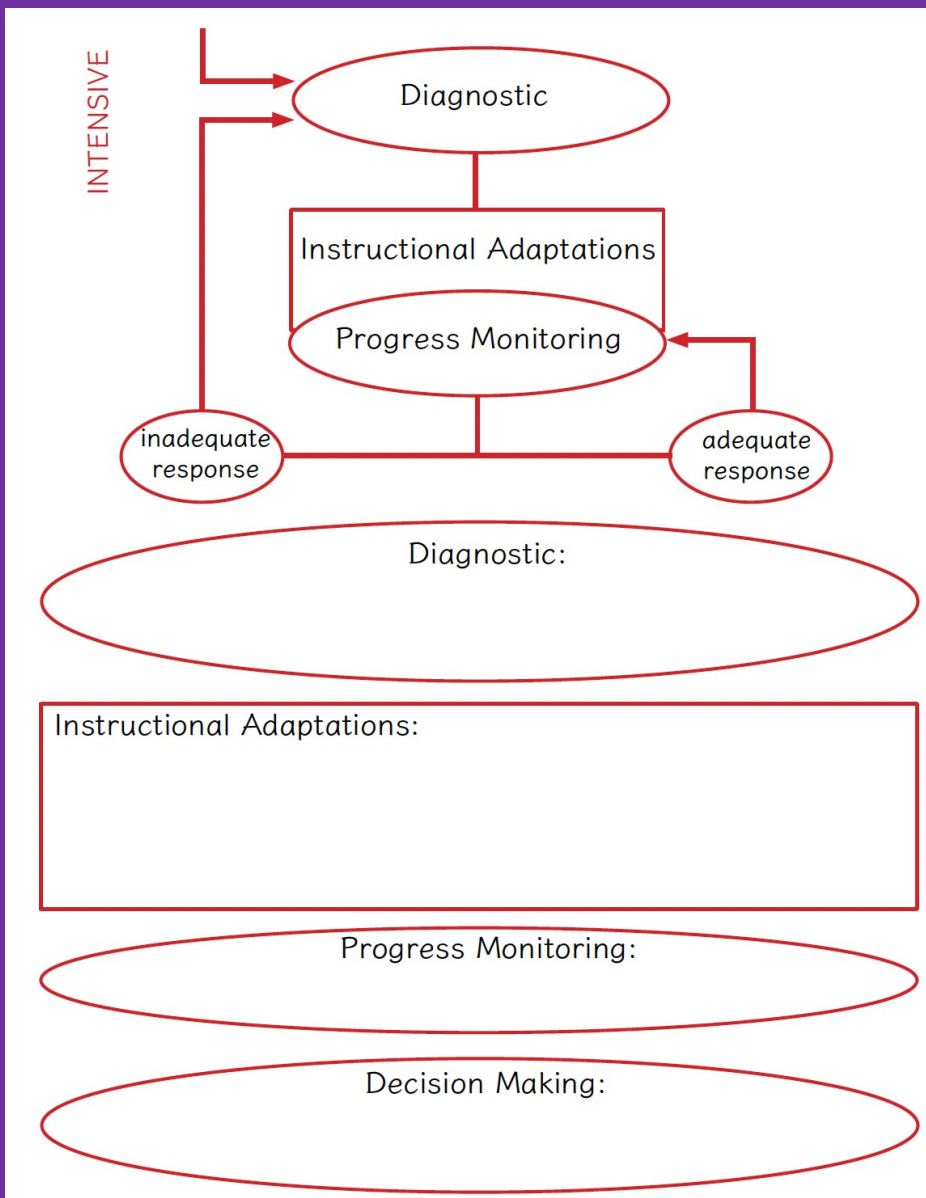
- Teachers set goals
- After 10-20 weeks, student progress is determined
 - Adaptations to instructional platform
 - Intensify support (Tier 3)

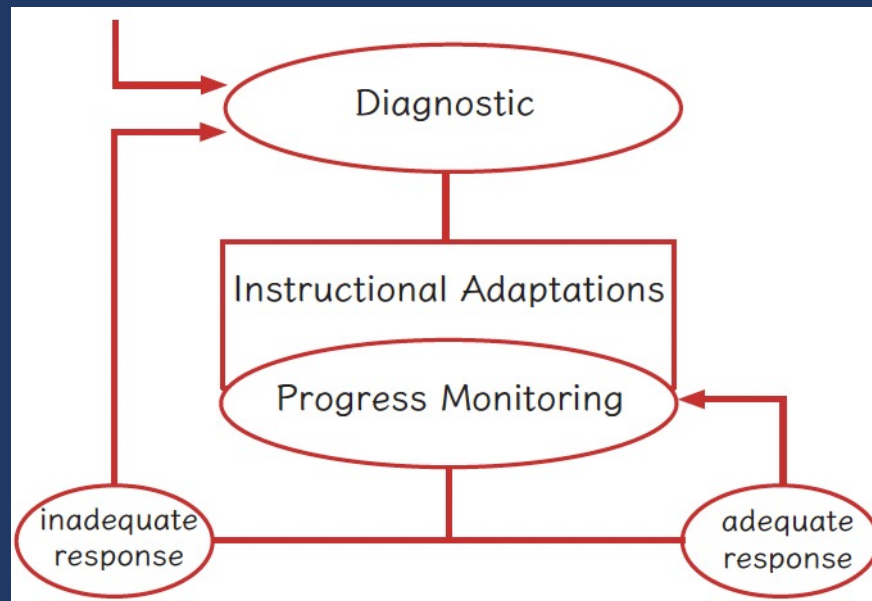


Describe your school's Tier 2 strengths.

Describe your school's Tier 2 opportunities for growth.







- Diagnostics are conducted
- Adaptations are made to the student's intervention
- Student progress is monitored weekly
 - With adequate slopes or end levels, students return to Tier 1 or 2

Implement with greater fidelity

Embed behavioral supports

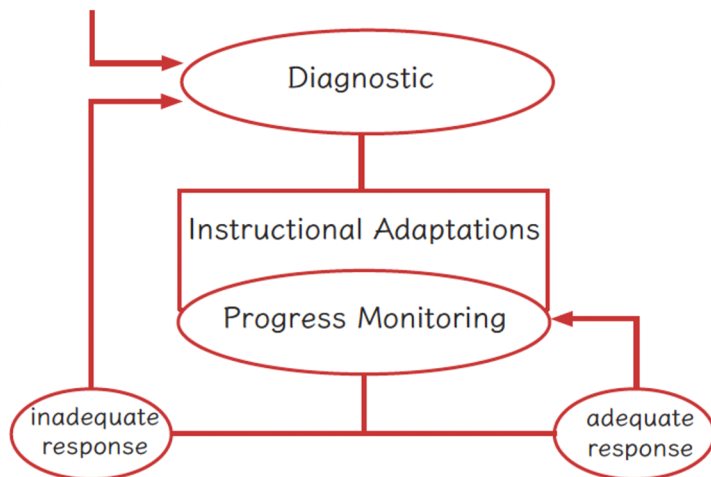
Increase dosage

Adapt mathematics content

Utilize explicit instruction

Explicitly teach transfer





Diagnostic:

- Formal data
- Informal data

Instructional Adaptations:

Implement with greater fidelity

Embed behavioral supports

Increase dosage

Adapt mathematics content

Utilize explicit instruction

Explicitly teach transfer

Progress Monitoring:

Decision Making:

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Acadience® Math / Computation Grade 4
Benchmark 1 / Form A

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Acadience® Math / Concepts and Applications
Grade 4 / Benchmark 1

Total: _____

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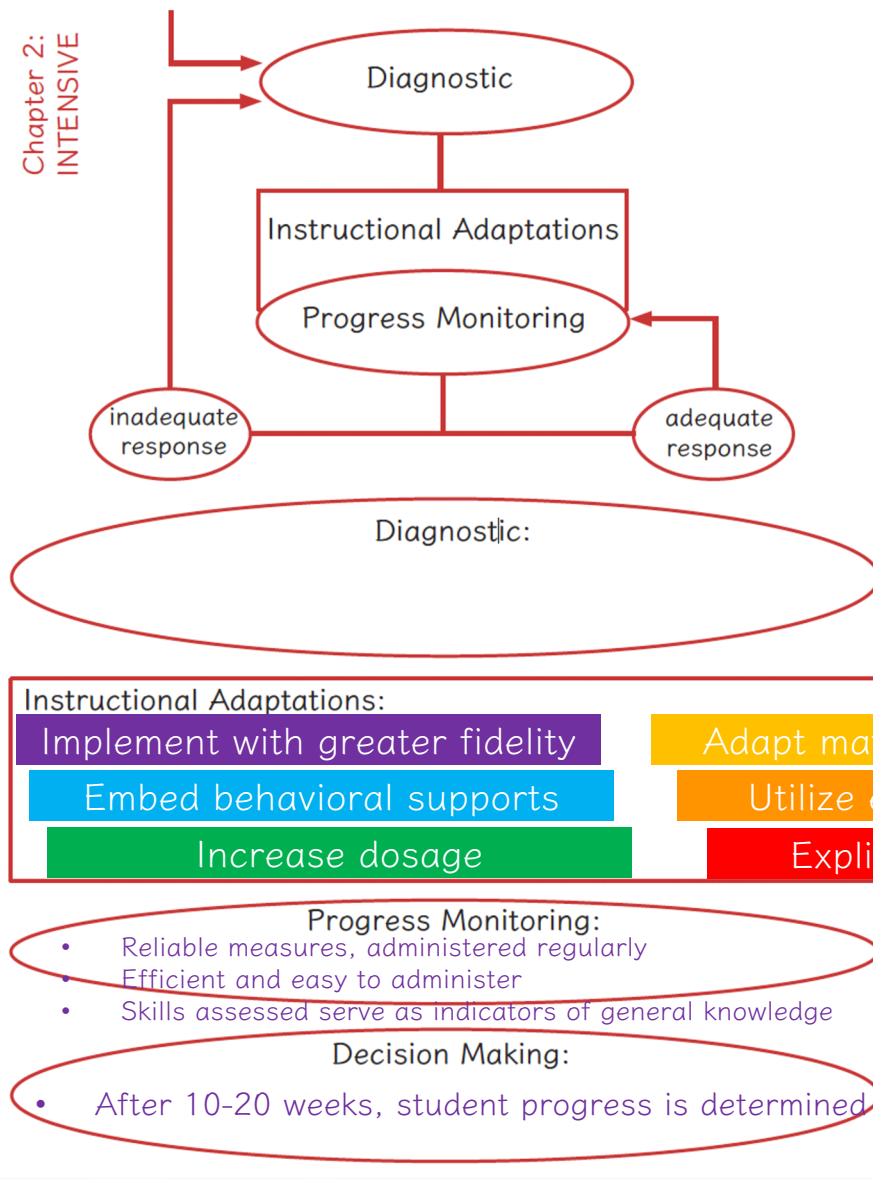
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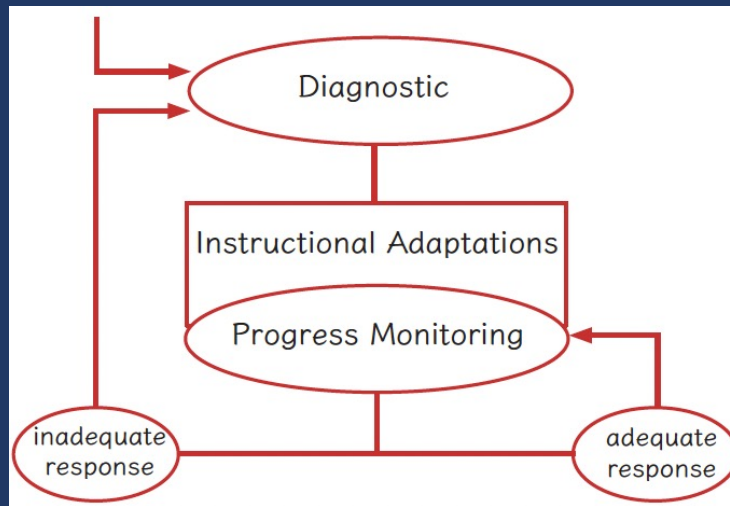
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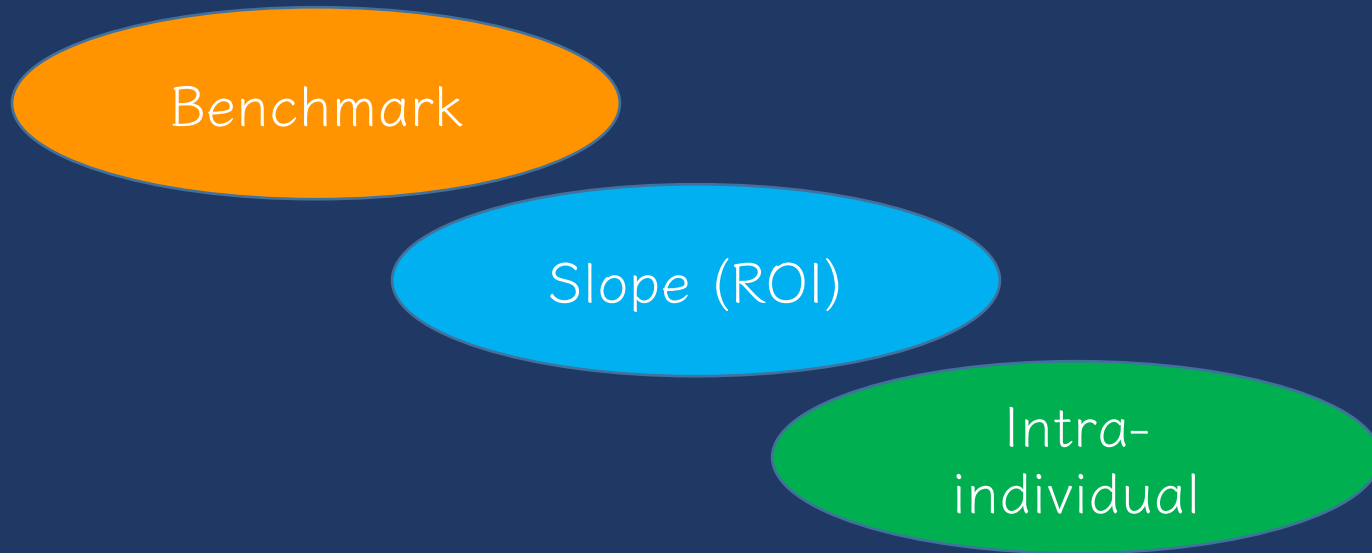




Describe your school's Tier 3 strengths.

Describe your school's Tier 3 opportunities for growth.

Setting Goals



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



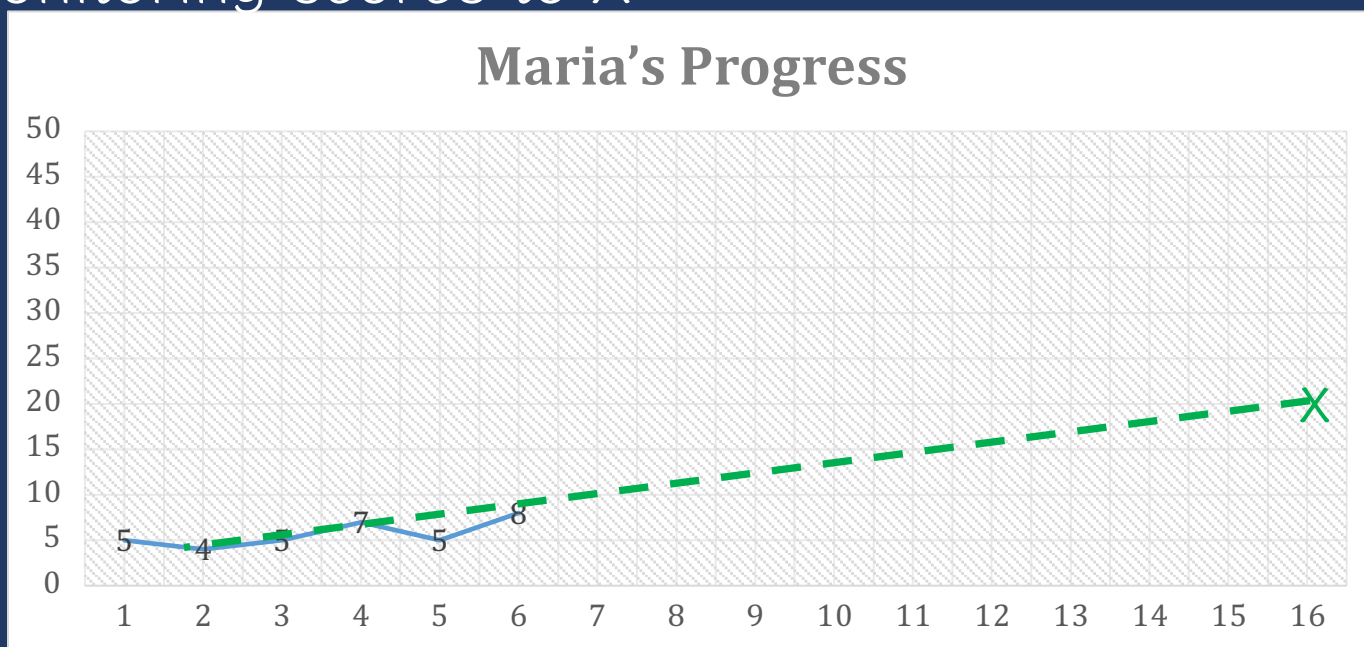
Benchmark

1. Identify appropriate grade-level benchmark

Grade	Computation	Concepts and Applications
1	20 digits	20 points
2	20 digits	20 points
3	30 digits	30 points
4	40 digits	30 points
5	30 digits	15 points
6	35 digits	15 points

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



Setting Goals

Benchmark

Slope (ROI)



Slope (ROI)

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



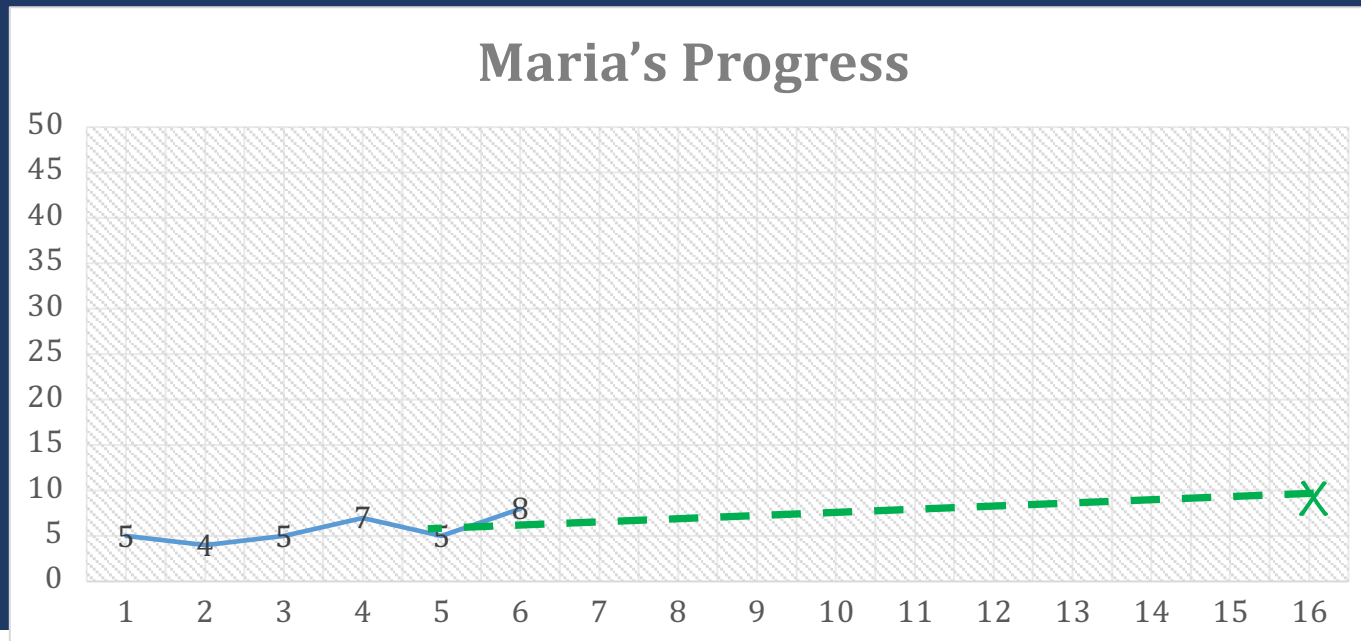
Slope (ROI)

1. Locate slope (i.e., rate of improvement – ROI)

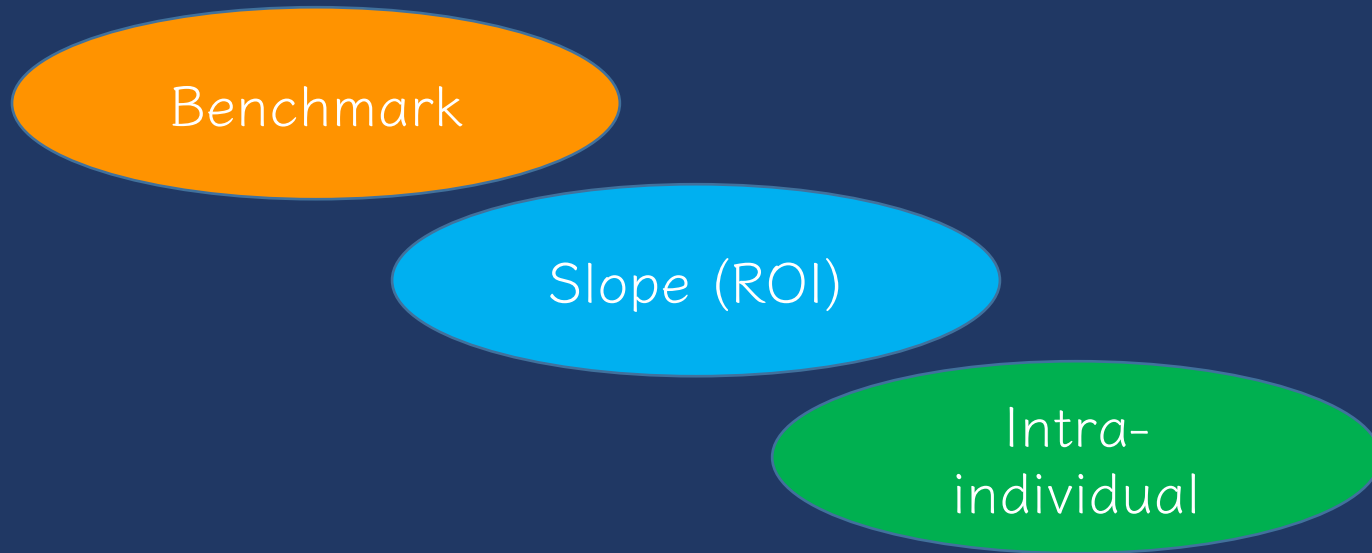
Grade	Computation—Slope for Digits Correct	Concepts and Applications — Slope for Points
1	0.35	No data available
2	0.30	0.40
3	0.30	0.60
4	0.70	0.70
5	0.70	0.70
6	0.40	0.70

Slope (ROI)

1. Locate slope (i.e., rate of improvement – ROI) 0.30
2. Multiply ROI by number of weeks left in intervention $0.30 \times 10 = 3$
3. Add to baseline of progress monitoring scores $3 + 6.7 = 9.7$
4. Mark goal on student graph with an X
5. Draw goal-line from baseline progress monitoring scores to X



Setting Goals



Intra- individual

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



Intra- individual

1. Identify student's slope

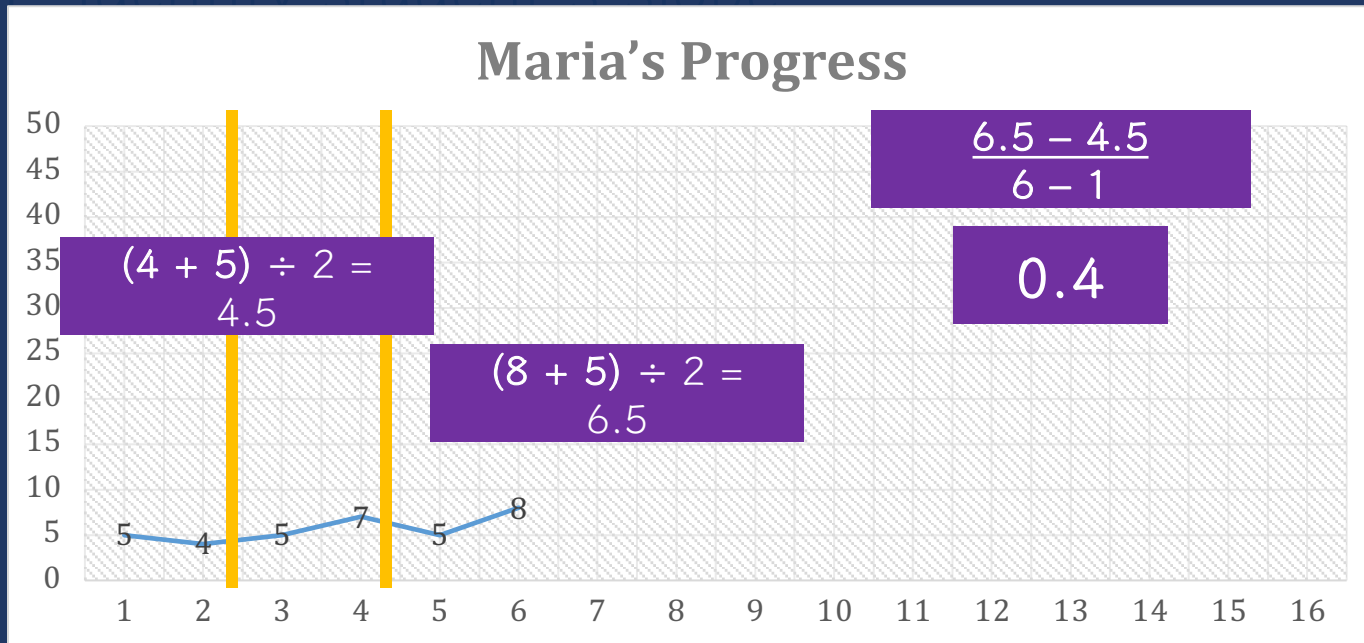
$$\text{SLOPE CALCULATION:}$$
$$\frac{3^{\text{rd}} \text{ median} - 1^{\text{st}} \text{ median}}{\# \text{data points} - 1}$$



Intra- individual

SLOPE CALCULATION:
$$\frac{3^{\text{rd}} \text{ median} - 1^{\text{st}} \text{ median}}{\# \text{data points} - 1}$$

1. Identify student's slope



Intra-individual

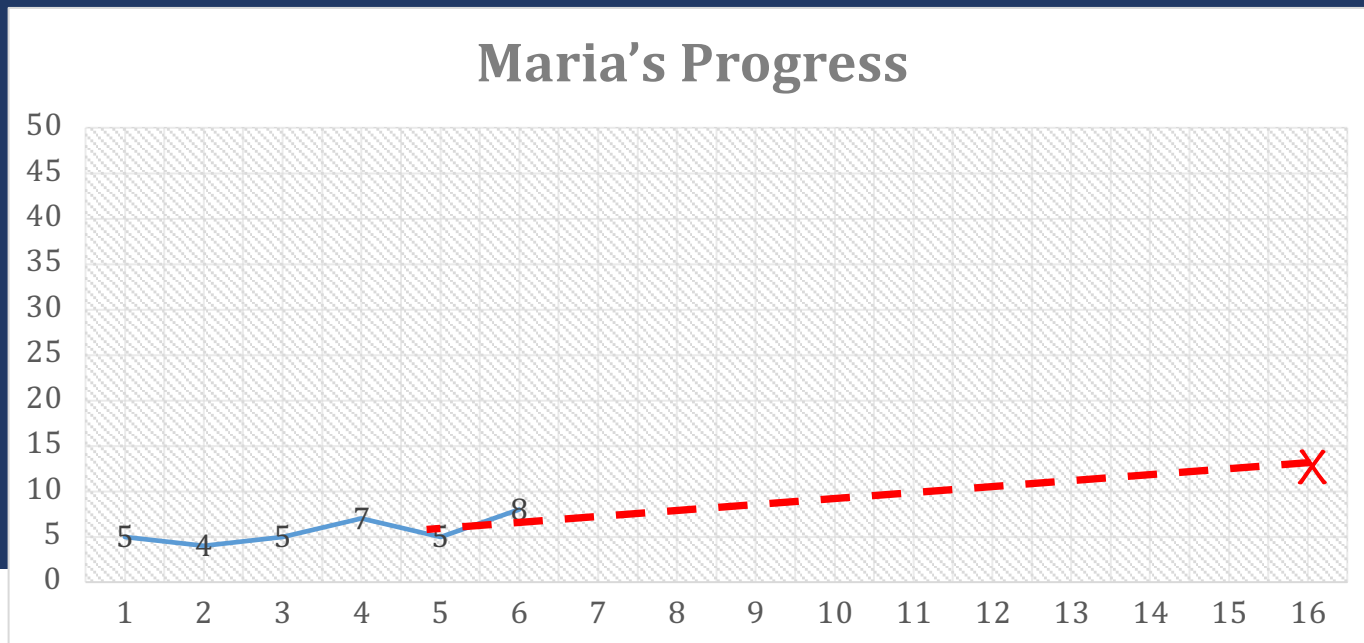
1. Identify student's slope
2. Multiply slope by 1.5
3. Multiply by number of weeks until end of intervention
4. Add to student's baseline score
5. Mark goal on student graph with an X
6. Draw goal-line from baseline progress monitoring scores to X

$$0.4$$

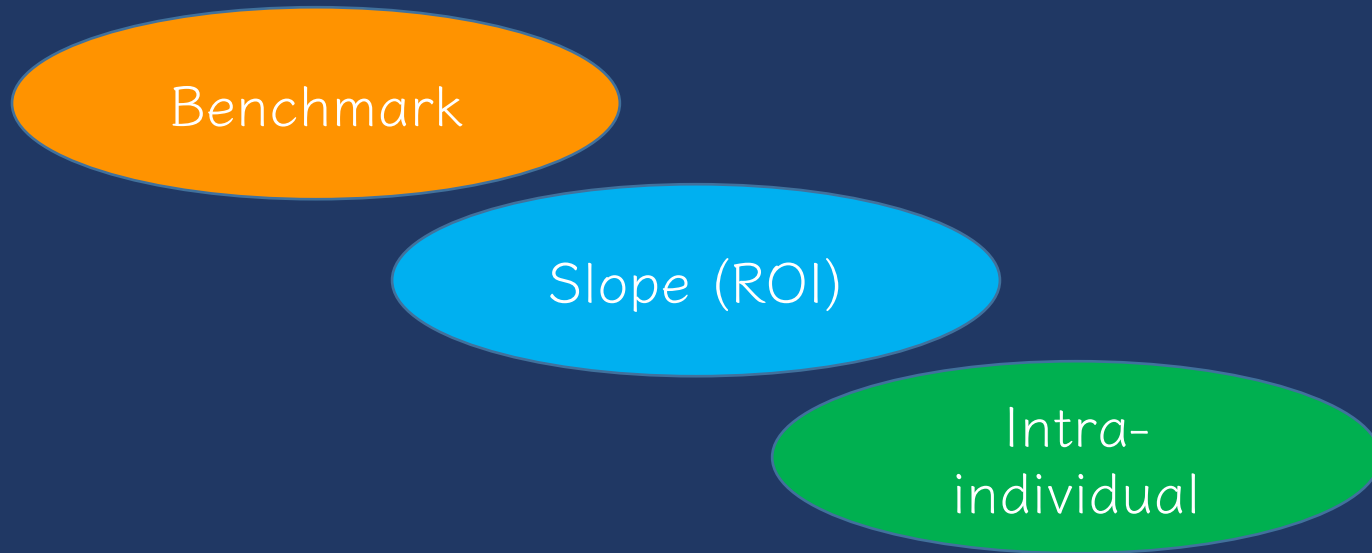
$$0.4 \times 1.5 = 0.6$$

$$0.6 \times 10 = 6$$

$$6 + 6.7 = 12.7$$



To Review

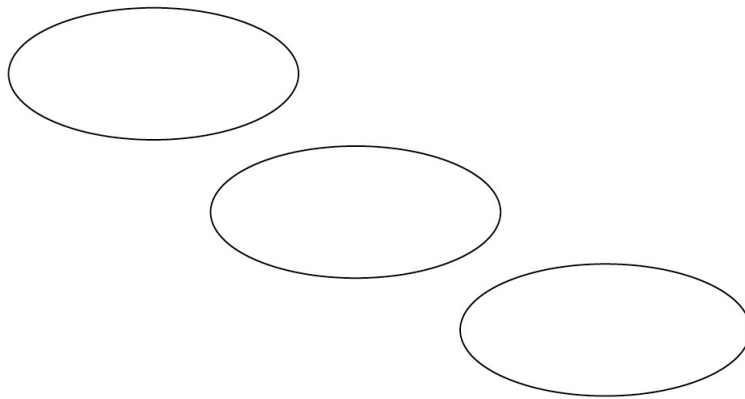




Which goal setting method(s) might you use?



Setting Goals



Determining Response

Four most recent, consecutive scores

Trendline

Determining Response

Four most recent, consecutive scores

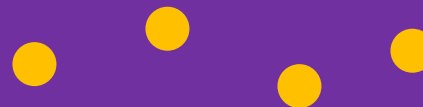


Trendline



Determining Response

Four most recent, consecutive scores



If at least 6 weeks of instruction have occurred:

- If all four most recent scores fall **above** the goal-line, increase the goal.

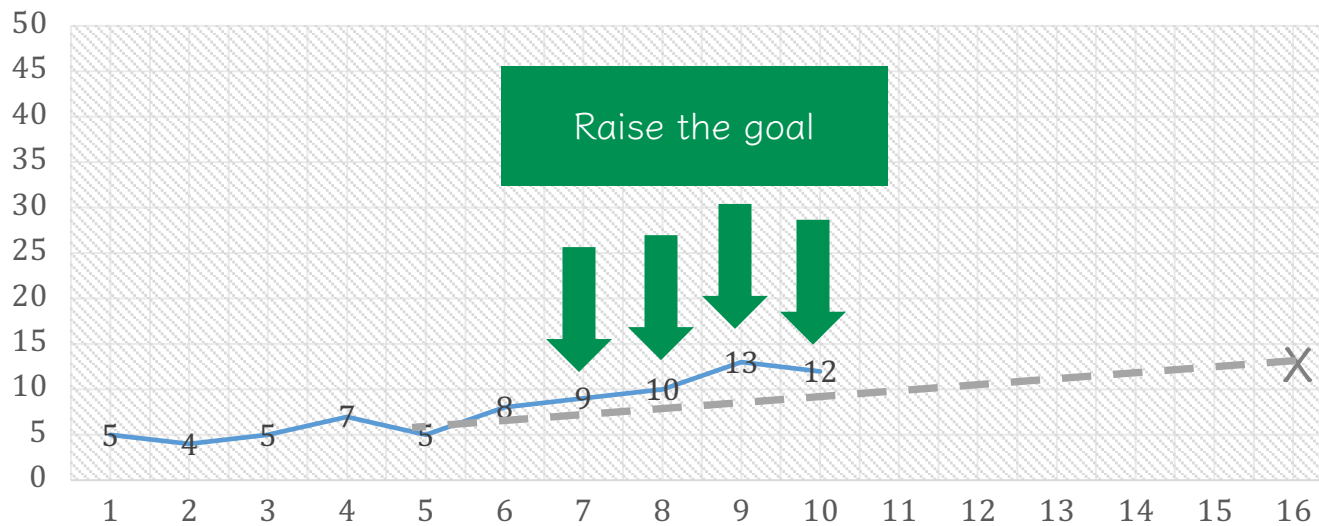


Determining Response

Four most recent, consecutive scores



Maria's Progress



Determining Response

Four most recent, consecutive scores



If at least 6 weeks of instruction have occurred:

- If all four most recent scores fall **above** the goal-line, increase the goal.
- If all four most recent scores fall **below** the goal-line, adapt the intervention.

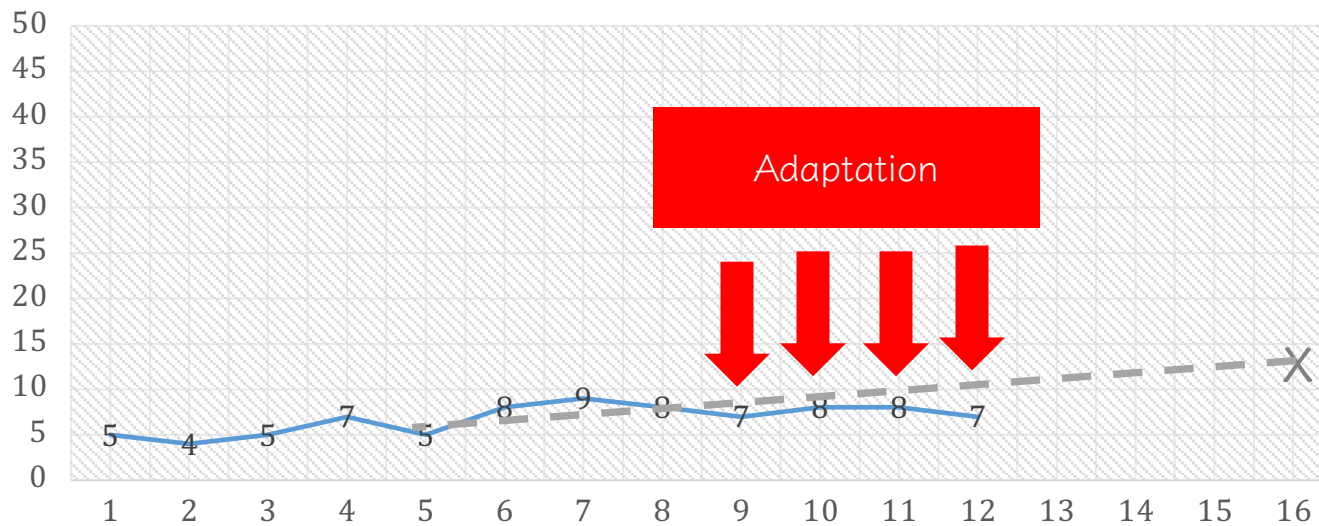


Determining Response

Four most recent, consecutive scores



Maria's Progress



Determining Response

Four most recent, consecutive scores



If at least 6 weeks of instruction have occurred:

- If all four most recent scores fall **above** the goal-line, increase the goal.
- If all four most recent scores fall **below** the goal-line, adapt the intervention.
- If the four most recent scores fall both **above and below** the goal-line, continue monitoring data.

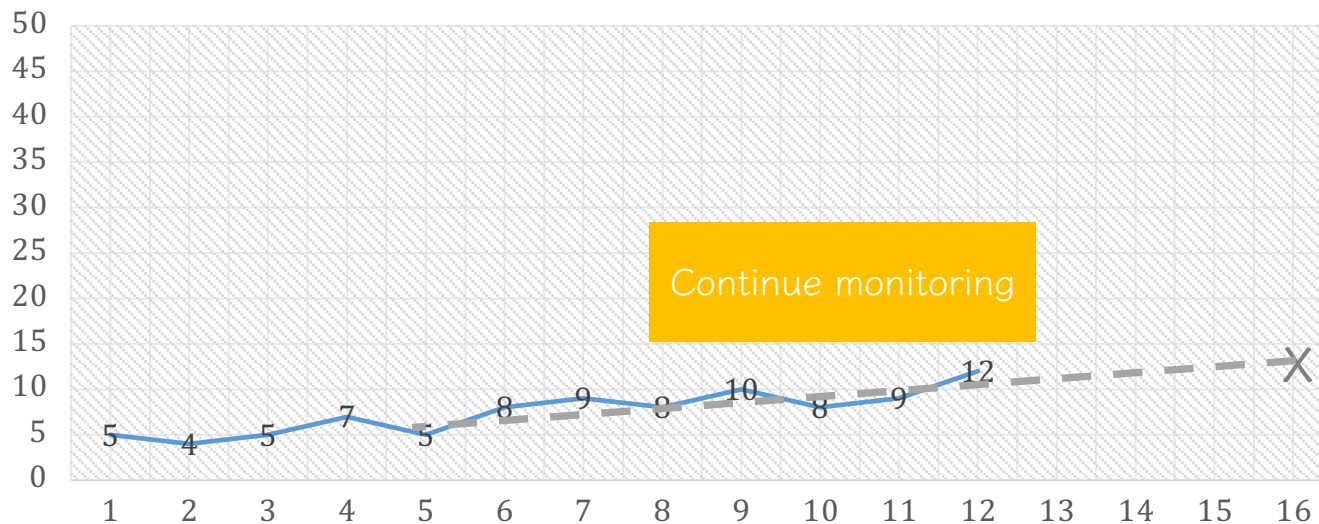


Determining Response

Four most recent, consecutive scores



Maria's Progress



Determining Response

Four most recent, consecutive scores



Trendline



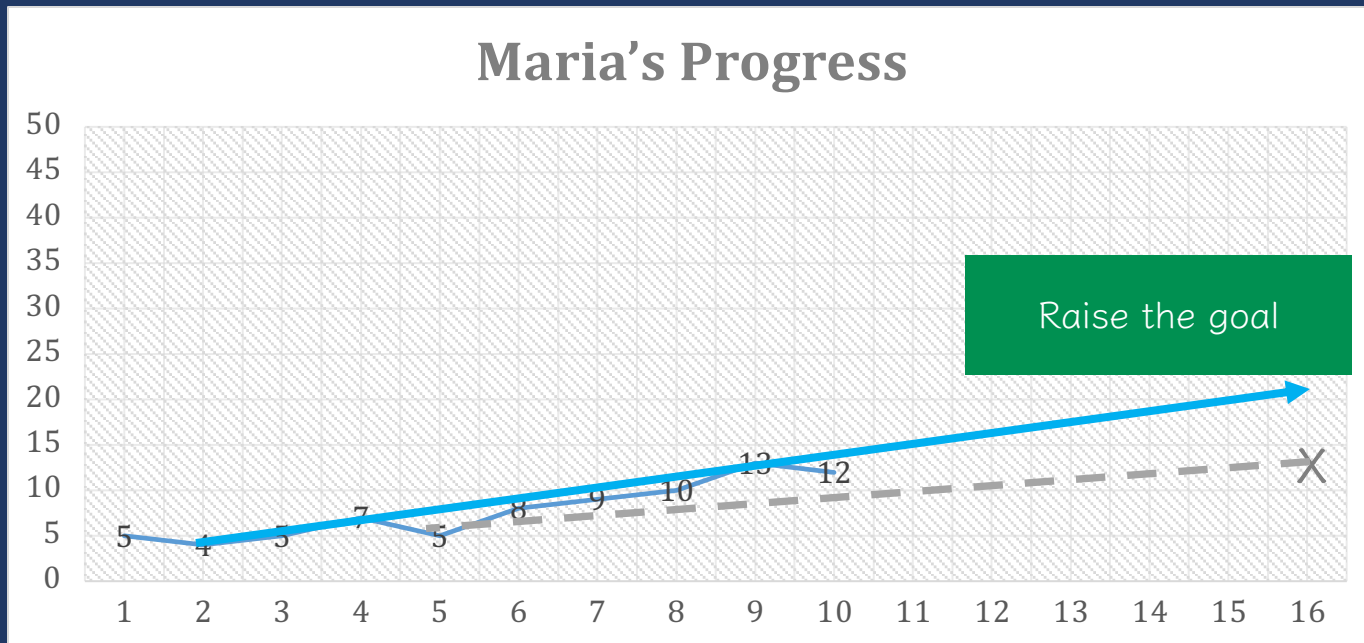
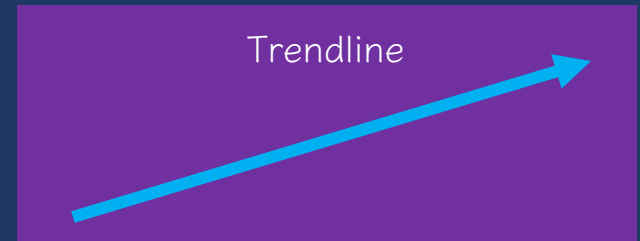
Determining Response



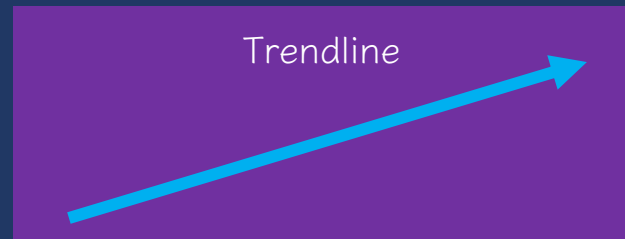
- If the trend-line is **steeper** than the goal line, then increase the goal.



Determining Response



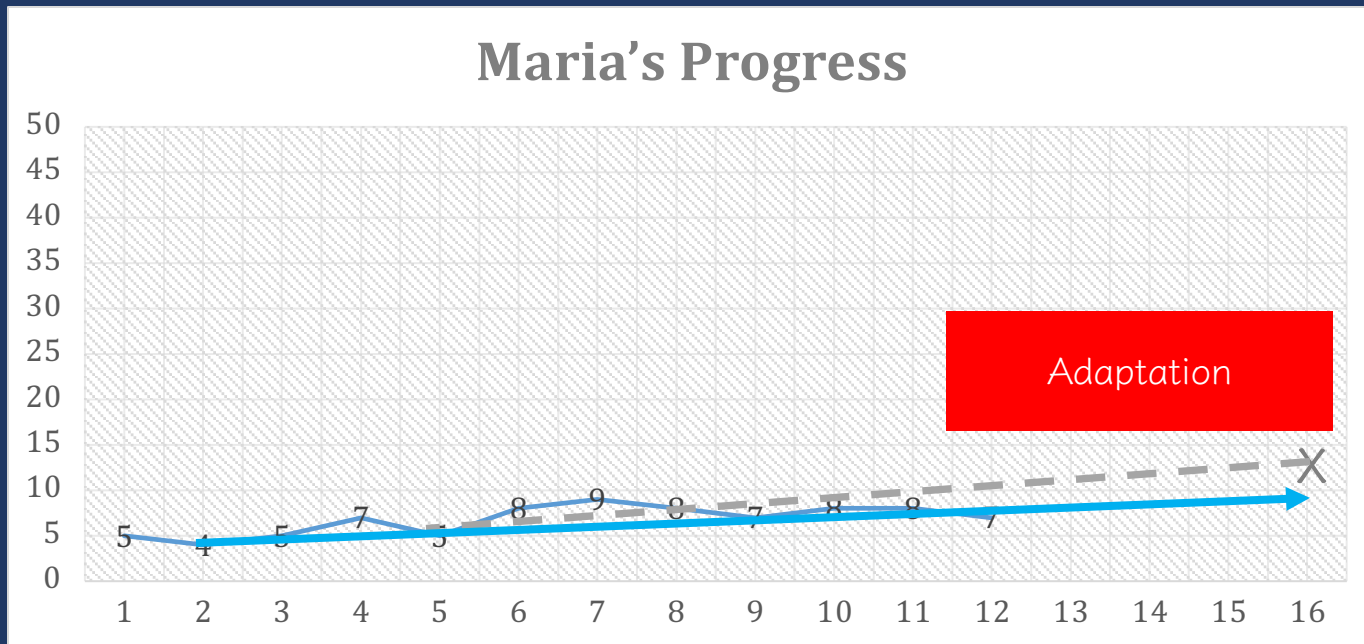
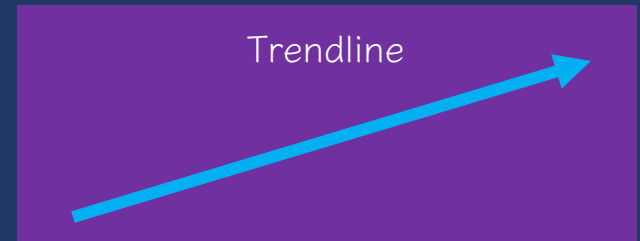
Determining Response



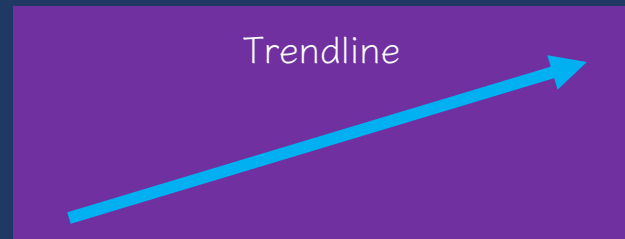
- If the trend-line is **steeper** than the goal line, then increase the goal.
- If the trend-line is **flatter** than the goal line, then adapt the intervention.



Determining Response

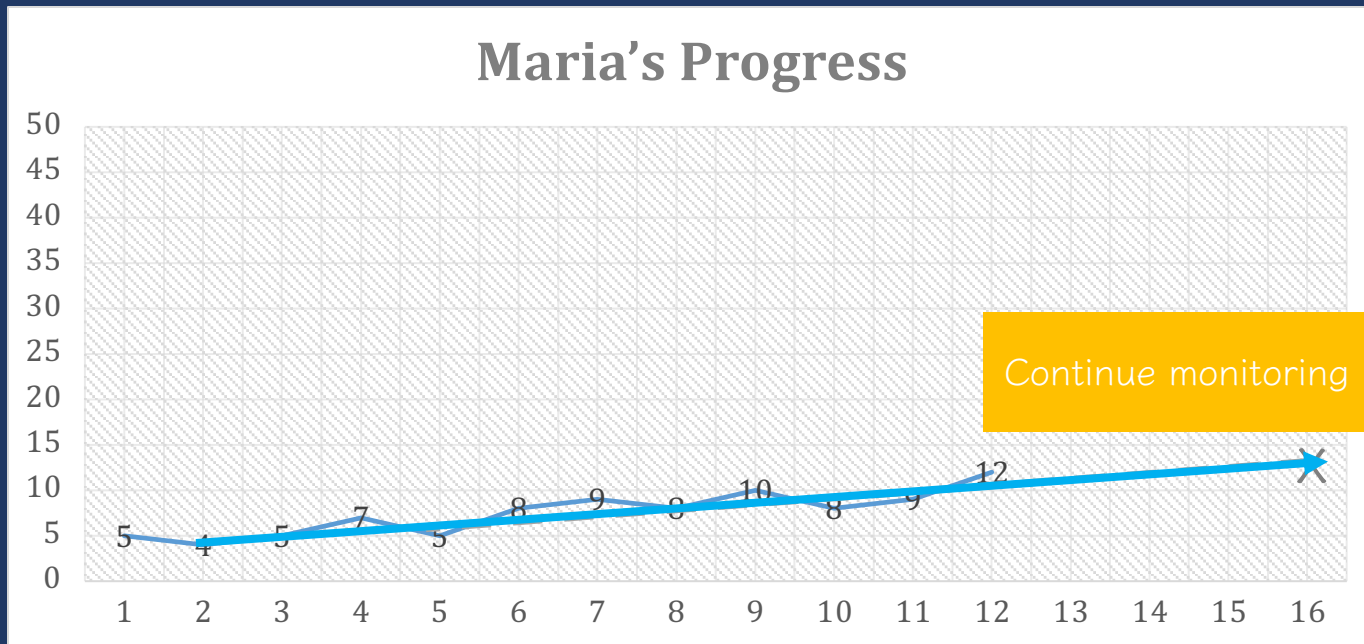


Determining Response



- If the trend-line is **steeper** than the goal line, then increase the goal.
- If the trend-line is **flatter** than the goal line, then adapt the intervention.
- If the trend-line and goal-line are **fairly equal**, continue monitoring progress.

Determining Response





Which decision making method(s)
might you use?



Instructional Adaptations



Implement with greater fidelity

Ensure that you are implementing the intervention or strategy with fidelity

Cover, Copy, and Compare:

1. Create a sheet for the student. This sheet should contain 10 problems and cover material the student needs to practice. All problems should be answered.
2. Ask the student to look at each problem and read it aloud.
3. Ask the student to cover the problem with an index card.
4. Ask student to copy the entire problem to the right of the covered problem.
5. Ask student to lift up index card and compare his or her copy to the original.
6. Repeat for all problems.
7. Conduct three times per week.

Math Fact Flash Cards

- ___ Tutor greets student.
- ___ Tutor starts timer.
- ___ Tutor begins flash card activity immediately.
- ___ Tutor reminds student of flash card procedures; answers questions if necessary.
- ___ Tutor sets timer for 1 minute.
- ___ Tutor allows student to respond to cards.
- ___ Tutor prompts student to Count Up if incorrect.
- ___ Tutor stops presenting cards when timer goes off.
- ___ Tutor prompts student to count correct cards.
- ___ Tutor encourages student to "beat the score" if possible.
- ___ Tutor sets timer for 1 minute.
- ___ Tutor allows student to respond to cards.
- ___ Tutor prompts student to Count Up if incorrect.
- ___ Tutor stops presenting cards when timer goes off.
- ___ Tutor prompts student to count correct cards.
- ___ Tutor prompts student to graph the high score.
- ___ Tutor records flash card score in attendance log.
- ___ Tutor rewards student with gold coin.
- ___ Tutor presents story problem #2.
- ___ Tutor allows time for student to respond.
- ___ Tutor praises/corrects student's responses.
- ___ Tutor rewards student with gold coin.
- ___ Tutor presents story problem #3.
- ___ Tutor allows time for student to respond.
- ___ Tutor praises/corrects student's responses.
- ___ Tutor rewards student with gold coin.

Sorting Activity

- ___ Tutor begins sorting activity immediately.
- ___ Tutor reminds student of sorting procedures and answers questions as necessary.
- ___ Tutor sets timer for 2 minutes.
- ___ Tutor reads cards out loud for student.
- ___ Tutor allows student to place cards on sorting mat without interrupting.
- ___ Tutor prompts student to stop when timer goes off.
- ___ Tutor goes through correction procedure with up to 3 cards from "incorrect" pile.
- ___ Tutor goes through cards with student, counting the number of correct cards.
- ___ Tutor rewards student with gold coin.
- ___ Tutor records sorting cards score on Attendance Log.

Word Problem Warm-Up

- ___ Tutor presents word problem from previous session.
- ___ Tutor encourages student to talk through problem.
- ___ Tutor assists with explanation, as needed.
- ___ Tutor rewards student with gold coin.

Tutoring Lesson

- ___ Tutor begins tutoring lesson immediately.
- ___ Tutor prompts student to describe Counting Up strategy.
- ___ Tutor quizzes student on 4 math facts, re-teaching as needed.
- ___ Tutor presents story problem #1.
- ___ Tutor allows time for student to respond.
- ___ Tutor praises/corrects student's response.
- ___ Tutor rewards student with gold coin.

Pirate Problems Daily Review

- ___ Tutor begins Pirate Problems Daily Review immediately.
- ___ Tutor reminds student of Pirate Problems procedures; answers questions as necessary.
- ___ Tutor sets timer for 2 minutes.
- ___ Tutor allows student to work independently for 2 minutes.
- ___ Tutor prompts student to stop when timer goes off.
- ___ Tutor sets timer for 2 more minutes (for word problem on back).
- ___ Tutor allows student to work independently for 2 more minutes.
- ___ Tutor prompts student to stop when timer goes off.
- ___ Tutor corrects the problems while student watches.
- ___ Tutor models Counting Up strategy for incorrectly answered items.
- ___ Tutor writes score on corner of sheet.
- ___ Tutor records Pirate Problems score in attendance log.
- ___ Tutor rewards student with gold coin.
- ___ Tutor prompts student to count coins and mark on map.
- ___ Tutor dismisses student to return to class.
- ___ Tutor stops timer.
- ___ Tutor records time of session in attendance log.
- ___ Tutor records date in attendance log.



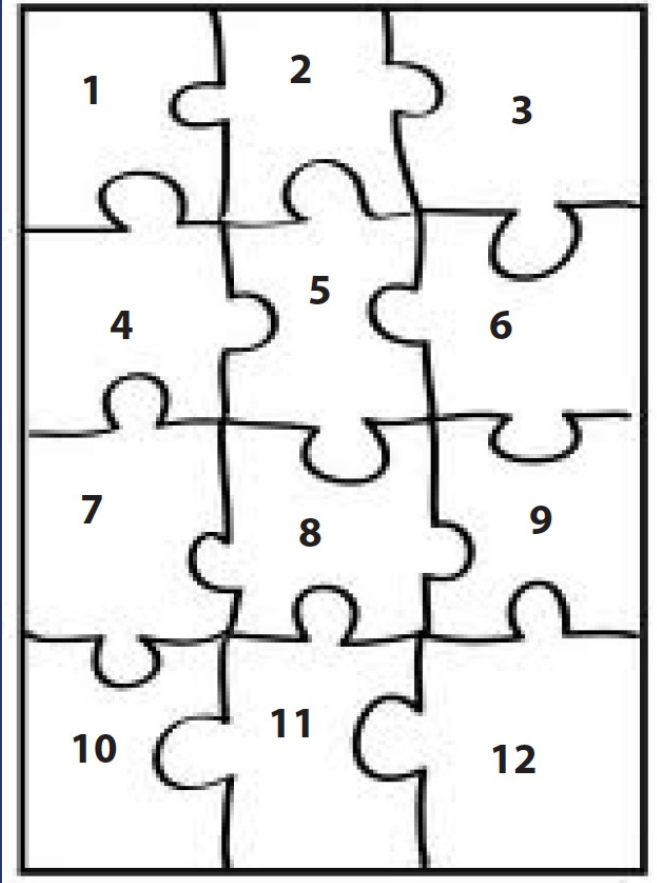
Implement with greater fidelity

Embed behavioral supports

May want to incorporate strategies to improve self-regulation and minimize nonproductive behavior

UPSCheck
Understand
Plan
Solve
Check

PUZZLE



Implement with greater fidelity

Embed behavioral supports

Increase dosage

Conduct longer sessions, more sessions per week, or more weeks within DBI

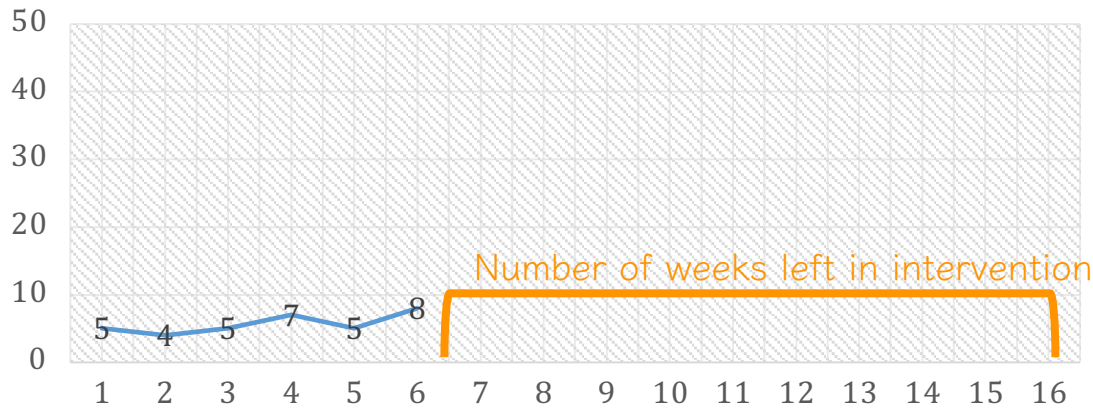


September

October 2015
S M T W T F S
1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30 31

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	31	1	2	3	4	5
6	7 Labor Day	8 ★	9 ★	10 ★	11 ★	12
13	14	15 ★	16 ★	17 ★	18 ★	19
20	21	22 ★	23 ★	24 ★	25 ★	26
27	28	29 ★	30 ★	1 ★	2 ★	3

Maria's Progress



Implement with greater fidelity

Embed behavioral supports

Increase dosage

Adapt mathematics content



Implement with greater fidelity

Embed behavioral supports

Increase dosage

Adapt mathematics content

Utilize explicit instruction

Make sure you're doing it! And do it well!

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



Implement with greater fidelity

Embed behavioral supports

Increase dosage

Adapt mathematics content

Utilize explicit instruction

Explicitly teach transfer

Explicitly teach how current
learning relates to other
learning

$$\begin{array}{r} 405 \\ + 16 \\ \hline \end{array} \quad \begin{array}{r} 4305 \\ + 216 \\ \hline \end{array}$$

Marney baked 89 cookies and sold 40 cookies at the bake sale. How many cookies does Marney have left?

Marney had \$89 and spent \$40 on shoes. How much money does Marney have left?

Marney had \$89 and spent \$40 on shoes. How much money will Marney have after buying the shoes?





Which adaptations would you consider a strength?

Which adaptation is an opportunity for growth?





What's one take away from today that you plan to use immediately?



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