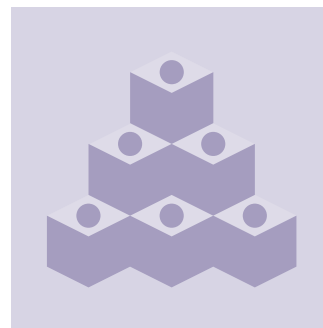
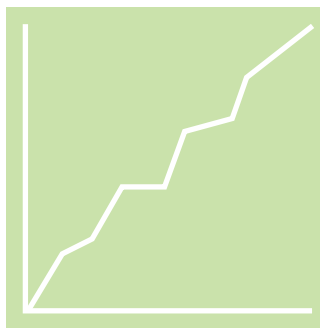


Beginning Implementer Series

Module 2: Progress Monitoring Training Manual



September 2011



National Center on Response to Intervention
<http://www.rti4success.org>



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This manual is not designed as a replacement for high-quality, ongoing professional development. It should be used as a supplemental resource to the *Module 2: Progress Monitoring* training PowerPoint slides and handouts. Please contact your state education agency for available training opportunities and technical assistance or contact the National Center on Response to Intervention (www.rti4success.org) for more information.

Introduction

The National Center on Response to Intervention (NCRTI) developed three training modules for beginning implementers of response to intervention (RTI). These modules are intended to provide foundational knowledge about the essential components of RTI and to build an understanding of the importance of RTI implementation. The modules were designed to be delivered over the course of a year and in the following sequence: Screening, Progress Monitoring, and Multi-Level Prevention System. RTI implementers should plan to follow up with additional training for advanced implementers.

This training is intended for teams in initial planning or implementation of a district-wide RTI framework as well as those districts transitioning from traditional pre-referral models to a district model of prevention. These trainings provide district teams with an overview of the essential components of RTI, opportunities to analyze school and district RTI data, activities to apply new knowledge, and team planning time.

Module 1: Screening

In this module, participants will become familiar with the essential components of an RTI framework: screening, progress monitoring, a multi-level prevention system, and data-based decision making. Participants will gain the necessary skills in order to use screening data to identify students at risk, to conduct basic data analysis using screening data, and to establish an effective screening process.

Module 2: Progress Monitoring

In this module, participants will apply previously learned skills to use screening data to evaluate the general effectiveness of the RTI framework and establish progress monitoring and intervention schedules. Participants will gain the necessary skills to use progress monitoring data to evaluate and make decisions about instruction, to establish data decision rules such as goal setting, and to establish an effective progress monitoring system.

Module 3: Multi-Level Prevention System

In this module, participants will review how screening and progress monitoring data can assist in decisions at all levels, including school, grade, class, and student. Participants will gain skills to select evidence-based practices, to make decisions about movement between levels of prevention, and to establish a multi-level prevention system.

The Beginning Implementer Series should be delivered by a trained, knowledgeable professional. This training series is designed to be a component of comprehensive professional development that includes supplemental coaching and ongoing support. Each training module includes the following training materials:

- PowerPoint Presentation
- Handouts
- Training Manual
- Facilitator Guide
- Recommended Resources

What Is RTI?

NCRTI offers a definition of response to intervention (RTI) that reflects what is currently known from research and evidence-based practice.

Response to intervention (RTI) integrates assessment and intervention within a schoolwide, multi-level prevention system to maximize student achievement and reduce behavior problems. With RTI, schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions, and adjust the intensity and nature of those interventions based on a student's responsiveness, and RTI may be used as part of the determination process for identifying students with specific learning disabilities or other disabilities.

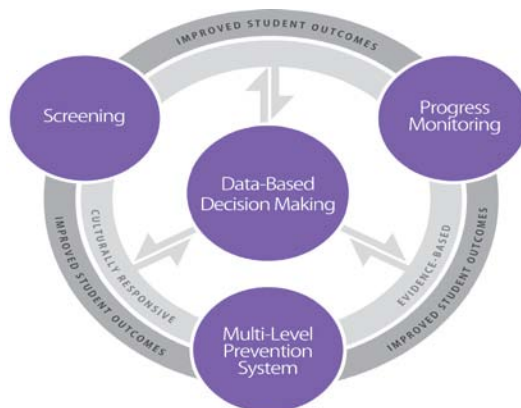
NCRTI believes that rigorous implementation of RTI includes a combination of high-quality, culturally and linguistically responsive instruction, assessment, and evidence-based intervention. Further, NCRTI believes that comprehensive RTI implementation will contribute to more meaningful identification of learning and behavioral problems, improve instructional quality, provide all students with the best opportunities to succeed in school, and assist with the identification of learning disabilities and other disabilities.

This document and training are based on the four essential components of RTI as identified by NCRTI:

- Schoolwide, multi-level instructional and behavioral system for preventing school failure
- Screening
- Progress monitoring
- Data-based decision making for instruction, movement within the multi-level system, and disability identification (in accordance with state law)

Exhibit 1 represents the relationship among the essential components of RTI. Data-based decision making is the essence of good RTI practice; it is essential for the other three components: screening, progress monitoring, and multi-level prevention system. All components must be implemented using culturally responsive and evidence-based practices.

Exhibit 1. Essential Components of RTI



Screening

Struggling students are identified by implementing a two-stage screening process. The first stage, universal screening, is a brief assessment for all students conducted at the beginning of the school year; however, some schools and districts use it two to three times throughout the school year. For students who score below the cut point on the universal screener, a second stage of screening is then conducted to more accurately predict which students are truly at risk for poor learning outcomes. This second stage involves additional, more in-depth testing or short-term progress monitoring to confirm a student's at-risk status. Screening tools must be reliable, valid, and demonstrate diagnostic accuracy for predicting which students will develop learning or behavioral difficulties.

Progress Monitoring

Progress monitoring is used to assess students' performance over time, to quantify student rates of improvement or responsiveness to instruction, to evaluate instructional effectiveness, and for students who are least responsive to effective instruction, to formulate effective individualized programs. Progress monitoring tools must accurately represent students' academic development and must be useful for instructional planning and assessing student learning. In addition, in tertiary prevention, educators use progress monitoring to compare a student's expected and actual rates of learning. If a student is not achieving the expected rate of learning, the educator experiments with instructional components in an attempt to improve the rate of learning.

Multi-Level Prevention System

Classroom instructors are encouraged to use research-based curricula in all subjects. When a student is identified via screening as requiring additional intervention, evidence-based interventions of moderate intensity are provided. These secondary interventions, which are in addition to the core or primary-level instruction, typically involve small-group instruction to address specific identified problems. These evidence-based interventions are well defined in terms of duration, frequency, and length of sessions, and the intervention is conducted as it was in the research studies. Students who respond adequately to secondary prevention return to primary prevention (the core curriculum) with ongoing progress monitoring. Students who show minimal response to secondary prevention move to tertiary prevention, where more intensive and individualized supports are provided. All instructional and behavioral interventions should be selected with attention to their evidence of effectiveness and with sensitivity to culturally and linguistically diverse students.

Data-based Decision Making

Screening and progress monitoring data can be aggregated and used to compare and contrast the adequacy of the core curriculum as well as the effectiveness of different instructional and behavioral strategies for various groups of students within a school. For example, if 60 percent of the students in a particular grade score below the cut point on a screening test at the beginning of the year, school personnel might consider the appropriateness of the core curriculum or whether differentiated learning activities need to be added to better meet the

needs of the students in that grade. Data can also be used to monitor individual student progress and response to instruction.

What Is Progress Monitoring ?

Research has demonstrated that when teachers use progress monitoring, specifically curriculum-based measures (CBMs), to inform their instructional decision making, students learn more, teacher decision making improves, and students are more aware of their own performance (Fuchs, Deno, & Mirkin, 1984). Research focused on CBMs conducted over the past 30 years has also shown CBMs to be reliable and valid (Deno, 1985; Germann & Tindal, 1985; Marston, 1988; Shinn, 1989).

The purpose of progress monitoring is to monitor students' response to primary, secondary, and tertiary instruction. Progress monitoring is not limited to those students identified for supplemental instruction. The data can also be used to:

1. Estimate the rates of improvement which allows for comparison to peers, of classes, of subgroups, and of schools
2. Identify students who are not demonstrating or making adequate progress so instructional changes can be made
3. Compare the efficiency or efficacy of different forms of instruction – in other words, which instructional approach or intervention led to the greatest growth among students (this comparison can occur at the student, class, grade, or school level).

Since screening tools cannot identify student as at risk for poor learning outcomes with 100 percent accuracy, progress monitoring can be used as a second step in the screening process in order to verify the results of screening. This may include students who are just above or just below the cut-off score.

Progress monitoring tools, just like screening tools, should be brief, reliable, valid, and evidence-based. Different progress monitoring tools may be used to capture different learning outcomes. Unlike screening, which occurs two to three times during the year, progress monitoring can be used anytime throughout the year. With progress monitoring, students are given standardized probes at regular intervals (weekly, bi-weekly, or monthly) to produce accurate and meaningful results that teachers can use to quantify short- and long-term student gains toward end-of-year goals. When and how frequently progress monitoring occurs is dependent on the sensitivity of the tools used and the typical rate of growth for the student. Progress monitoring tools should be administered at least monthly, though more-frequent data collection is recommended given the amount of data needed for making decisions with confidence (six to nine data points for many tools) (Christ & Silberglitt, 2007).

Progress Monitoring Assessments

In selecting appropriate progress monitoring assessments, it is important to remember that there are three types of assessments that are used in an RTI framework: summative, diagnostic, and formative. Progress monitoring assessments are formative assessments. With formative assessment, student progress is systematically assessed to provide continuous feedback to both the student and the teacher concerning learning successes and failures. They can be used to identify students who are not responsive to instruction or interventions (screening) and to understand rates of student improvement (progress monitoring). They can also be used to make curriculum and instructional decisions, to evaluate program effectiveness, to proactively

allocate resources, and to compare the efficacy of instruction and interventions. Progress monitoring tools should be brief assessments of direct student performance. While formative assessments can be both formal and informal, formal or standardized progress monitoring assessments provide data to support the conclusions made from the progress monitoring test used. The data for these formal assessments are mathematically computed and summarized. Scores such as percentiles, stanines, or standard scores are most commonly given from this type of assessment.

There are two common types of progress monitoring assessments: mastery measures and general outcome measures (GOM).

Mastery Measures

Mastery measures determine the mastery of a series of short-term instructional objectives. For example, a student may master multi-digit addition and then master multi-digit subtraction. To use mastery measures, teachers must determine a sensible instructional sequence and design criterion-referenced testing procedures to match each step in that instructional sequence. The hierarchy of skills used in mastery measurement is logical, not empirical. This means that while it may seem logical to teach addition first and then subtraction second, there is no evidence base for the sequence. Teacher-made tests present concerns given the unknown reliability and validity of these measures.

Mastery measures can be beneficial in assessing whether a student can learn target skills in isolation and can help teachers to make decisions about changing target skill instruction. Because mastery measures are based on mastering one skill before moving on to the next skill, the assessment does not reflect maintenance or generalization. It becomes impossible to know if, after teaching one skill, the student still remembers how to perform the previously learned skill. In addition, how a student does on a mastery measure assessment does not indicate how he or she will do on standardized tests because the number of objectives mastered does not relate well to performance on criterion measures.

General Outcome Measures

General outcome measures (GOMs) are indicators of general skill success and reflect overall competence in the annual curriculum. They describe students' growth and development over time or both their "current status" and their "rate of development." Common characteristics of GOMs are that they are simple and efficient, are sensitive to improvement, provide performance data to guide and inform a variety of educational decisions, and provide national/local norms allow for cross comparisons of data.

Additional information about mastery measures, GOMs, and other forms of assessment can be found in Module 1 focused on screening.

Selecting a Progress Monitoring Tool

In addition to determining the type of formative assessment, mastery measure or general outcome measure, schools and districts must select the appropriate tool. NCRTI has developed a Progress Monitoring Tools Chart that provides relevant information for selecting both mastery measures and general outcome measures. Each year, NCRTI has a call for tool developers to submit their tools for review. A technical review committee (TRC), made up of experts in the field, reviews the tools for technical rigor. The NCRTI Progress Monitoring Tools Chart is not an exhaustive list of all available progress monitoring measures, as vendors or tool developers must submit their tool in order for it to be reviewed. Learn more about the tools available by visiting the Progress Monitoring Tools Chart at www.rti4success.org.

The tools chart provides information on the technical rigor of the tools, the implementation requirements, and data that supports the tool. To learn about the different information that the tools chart provides and the suggested steps for review view the User Guide at www.rti4success.com. The six recommended steps include in the User Guide are 1) gather a team, 2) determine your needs 3) determine your priorities 4) familiarize yourself with the content and language of the tools chart, 5) review the ratings and implementation data, 6) ask for more information. Similar to screening, establishing a progress monitoring process begins with identifying the needs, priorities and resources of the district or school and then selecting a progress monitoring tool that matches those needs and resources. Prior to tool selection, teams must consider why progress monitoring is being conducted, what they hope to learn from the progress monitoring data, and how the results will be used. It is important to note that schools and districts should accurately identify their needs but might be unable to address all of the needs due to the available resources.

Once a tool is selected, districts and schools need to continuously evaluate whether the progress monitoring tool matches their needs and resources and provides the data needed to inform their decisions.

What Is Curriculum-Based Measurement (CBM)?

CBM, a commonly used GOM, is used to assess students' academic competence at one point in time (as in screening or determining final status following intervention) and to monitor student progress in core academic areas (as in progress monitoring). CBM, which is supported by more than 30 years of research, is used across the United States. It demonstrates strong reliability, validity, instructional utility, and alternate forms of equivalent difficulty. CBM produces accurate, meaningful information about students' academic levels and their rates of improvement, and CBM corresponds well with high-stakes tests. When teachers use CBM to inform instructional decisions, students achieve better (Fuchs, Deno, & Mirkin, 1984; Deno, 1985; Germann & Tindal, 1985; Marston, 1988; Shinn, 1989).

In this manual, progress monitoring will be operationalized through the use of curriculum-based measurement (CBM).

- CBM benchmarks will be used for identifying students suspected to be at risk
- CBM slope will be used to confirm or disconfirm actual risk status by quantifying short-term response to general education primary prevention across 6–10 weeks.
- CBM slope and final status will be used to define responsiveness to secondary preventative intervention.
- CBM slope and final status will be used to:
 - a. Set clear and ambitious goals
 - b. Inductively formulate effective individualized programs
 - c. Assess responsiveness to tertiary prevention to formulate decisions about when students should return to less intensive levels of the prevention system.

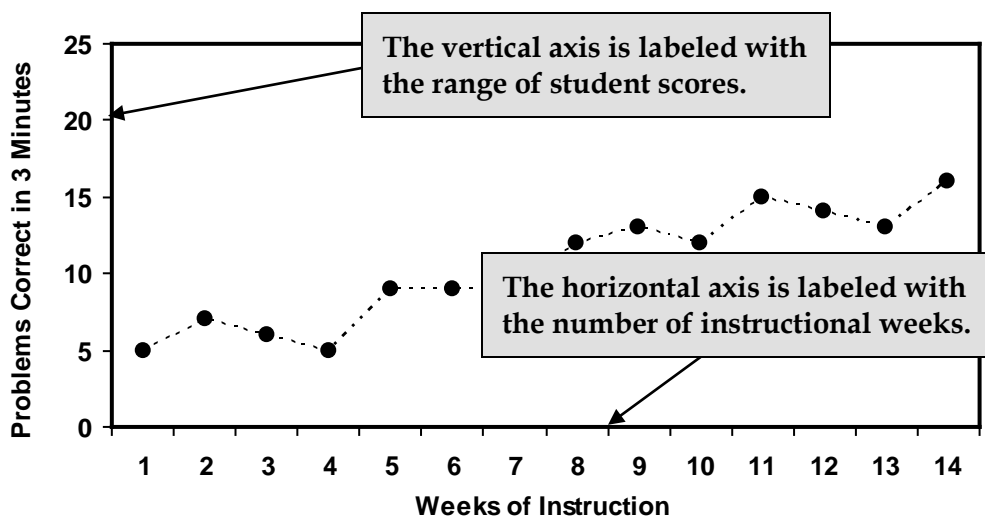
Graphing and Progress Monitoring

To monitor progress, each student suspected of being at risk is administered one CBM alternate form on a regular basis (weekly, bi-weekly, or monthly), and the student's scores are charted on a graph. With CBM graphs, the rate at which students develop academic performance over time can be quantified. Increasing scores indicate the student is responding to the instructional program. Flat or decreasing scores indicate the student is not responding to the instructional program, and a change to the student's instruction needs to take place.

Graphing CBM scores is easy on teacher-made graphs and through current data systems. Teachers create individual student graphs to interpret the CBM scores of every student and see progress or lack thereof. Alternatively, teachers can use software to handle graph creation and data analysis. When developmentally appropriate, teachers can also involve students in measuring their own progress.

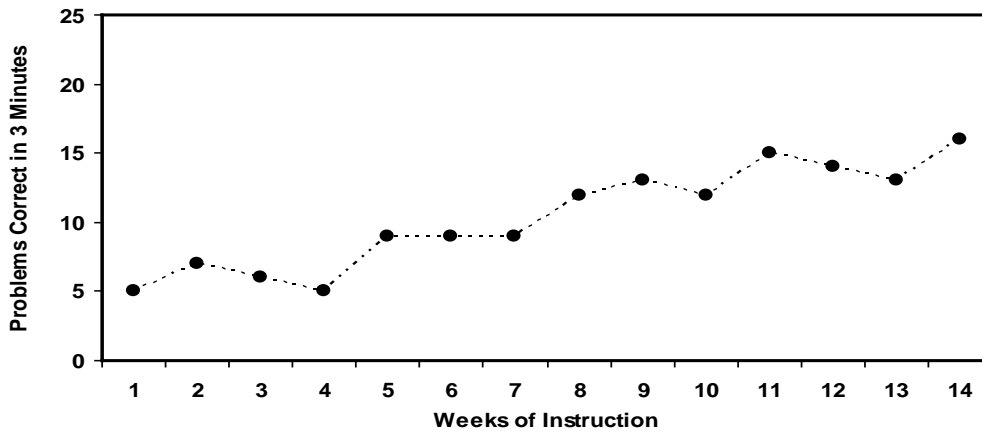
Teachers should create a master CBM graph in which the vertical axis accommodates the range of the scores of all students in the class. The range of scores should extend from zero to the highest possible CBM score (See Appendix D for a blank sample). On the horizontal axis, the number of weeks of instruction is listed (Exhibit 2). Once the teacher creates the master graph, it can be copied and used as a template for every student. If teachers use existing software systems, they input the required data (e.g., number of weeks) and the system will create the graph.

Exhibit 2. Sample CBM Template



Every time a CBM probe is administered, the teacher scores the probe and then records the score on a CBM graph (Exhibit 3). A line can be drawn connecting each data point.

Exhibit 3. Sample CBM Graph

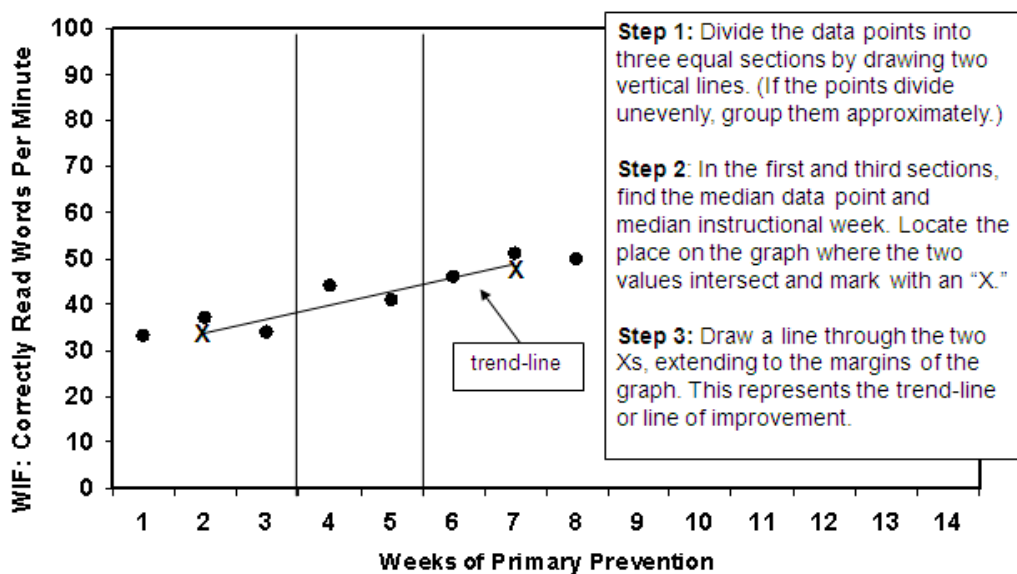


Calculating Slope

Calculating the slope of a CBM graph is important to assist in determining student growth during primary, secondary, and tertiary prevention. First, graph the CBM scores (Exhibit 4). Then, draw a trend line using a procedure called the Tukey method and calculate the slope of the trend line. Follow these steps for the Tukey method (Hutton, Dubes, & Muir, 1992).

1. Divide the data points into three equal sections by drawing two vertical lines. (If the points divide unevenly, group them approximately.)
2. In the first and third sections, find the median data point and CBM week. Locate the place on the graph where the two values intersect and mark with an X.
3. Draw a line through the two Xs.

Exhibit 4. Drawing a Trend Line Using the Tukey Method



The slope is calculated by first subtracting the median point in the first section from the median point in the third section. Then, divide this by the number of data points minus 1.

$$\frac{\text{third median} - \text{first median}}{\text{number of data points} - 1}$$

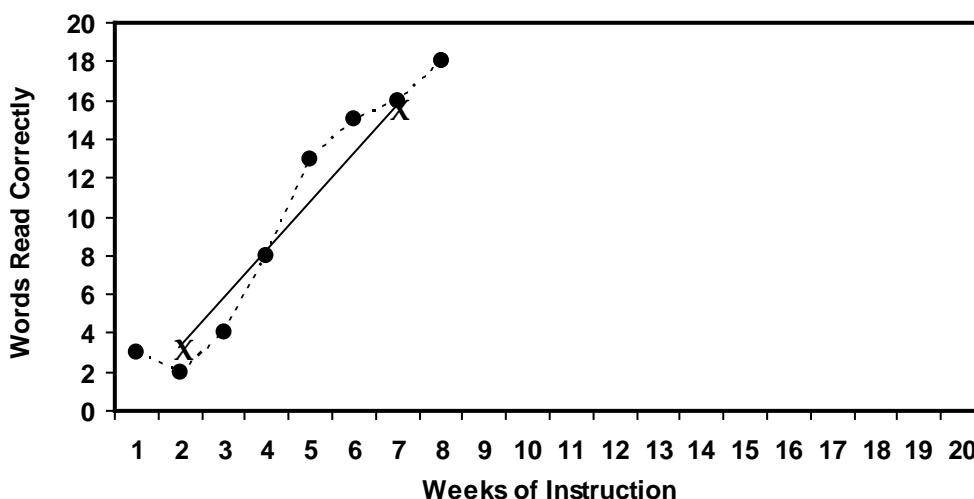
For example, in Exhibit 4, the third median data point is 50, and the first median data point is 34. The total number of data points is 8. So, $(50 - 34) \div 7 = 2.3$. The slope of this graph is 2.3.

The next few exhibits show how CBM scores are graphed and how decisions concerning RTI can be made using the graphs. Handouts 4 and 5 provide opportunities to practice using the Tukey method to calculate slope.

Exhibit 5 shows a graph for Sarah, a first-grade student. Sarah was suspected of being at risk for reading difficulties after scoring below the CBM Word Identification Fluency (WIF) screening cut-off. Her progress in primary prevention was monitored for eight weeks. Sarah's progress on the number of words read correctly looks like it's increasing, and the slope is calculated to quantify the weekly increase and to confirm or disconfirm at-risk status.

Sarah's slope is $(16 - 3) \div 7 = 1.9$. Research suggests that the first-grade cut-off for adequate growth in general education is 1.8. Sarah's slope indicates that she is benefiting from the instruction provided in primary prevention, and she does not need secondary prevention at this time.

Exhibit 5. Sarah's Progress on Words Read Correctly – Primary Prevention



Look at Exhibit 6. Jessica is also a first-grade student who was suspected of being at risk for reading difficulties when she scored below the CBM Word Identification Fluency screening cut-off point in September. After monitoring her progress for 8 weeks, Jessica's scores on the number of words read correctly are not increasing. Jessica's slope is $(6 - 6) \div 7 = 0$. Her slope is

not above the first-grade cut-off of 1.8 for adequate progress in general education. Jessica needs secondary intervention at this time.

Exhibit 6. Jessica's Progress on Words Read Correctly – Primary Prevention

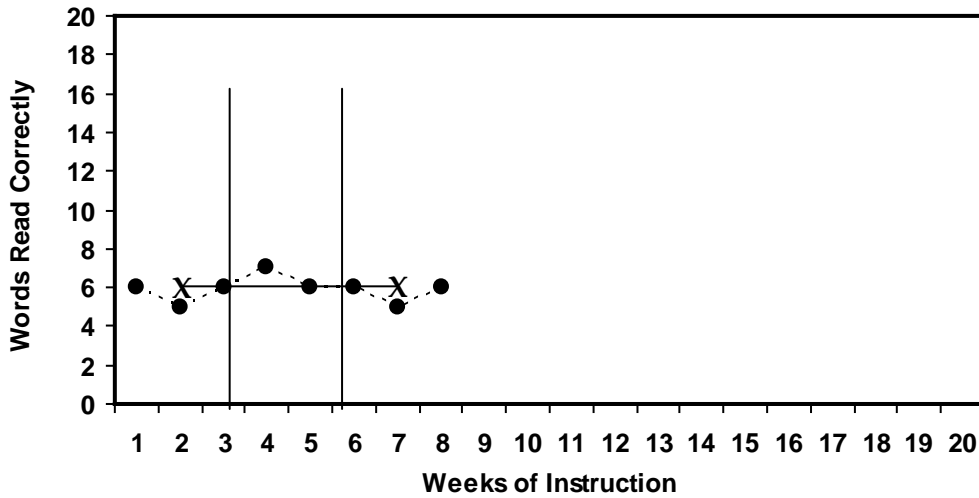
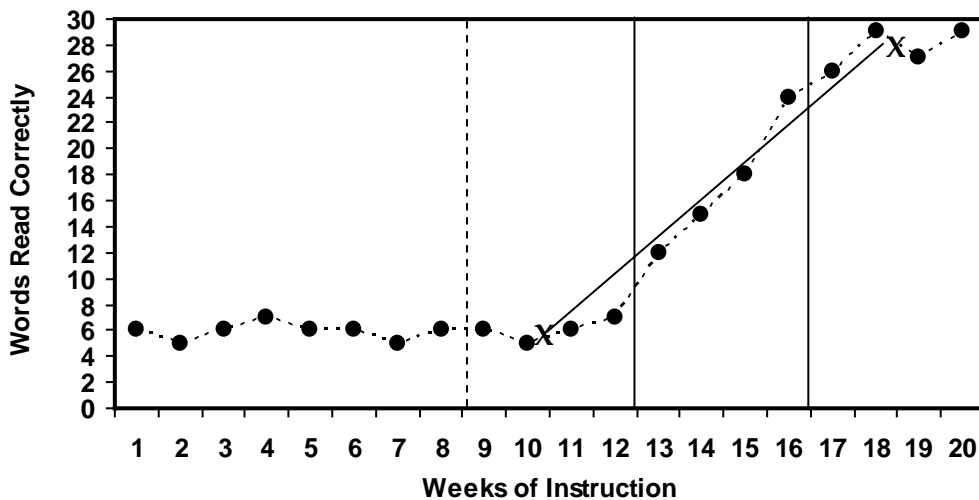


Exhibit 7 shows Jessica's graph after she has completed 12 weeks of secondary prevention. Her progress has been monitored weekly. The dotted line on the graph is drawn at the point that Jessica left primary prevention and entered secondary prevention. Over 12 weeks, Jessica's scores are increasing.

Jessica's slope is calculated as $(28 - 6) \div 11 = 2.0$. Her slope is above the first-grade cut-off of 1.8 for growth in secondary prevention. Jessica can exit secondary prevention at this time and go back to general education.

Exhibit 7. Jessica's Progress on Words Reading Correctly – Secondary Prevention



Practice calculating the slope and using the data to make decisions about student’s response to primary, secondary, or tertiary instruction in Handouts 6–8.

Goal Setting

There are three options for setting goals.

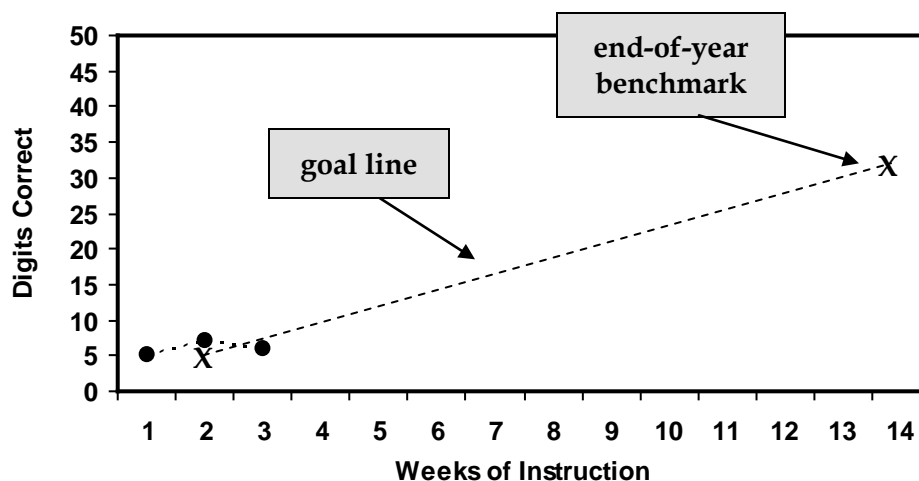
Option 1: Benchmarks. The first option is end-of-year benchmarking. For typically developing students at the grade level where the student is being monitored, identify the end-of-year CBM benchmark (Exhibit 8). This is the end-of-year performance goal. The benchmark is represented on the graph by an X at the date marking the end of the year. A goal line is then drawn between the median of at least the first three CBM graphed scores and the end-of-year performance goal.

Exhibit 8. Typical End-of-Year Benchmarks in Reading and Math

Grade	Reading	Computation	Concepts and Applications
Kindergarten	40 sounds/minute (LSF)	—	—
Grade 1	60 words/minute (WIF)	20 digits	20 points
Grade 2	75 words/minute (PRF)	20 digits	20 points
Grade 3	100 words/minute (PRF)	30 digits	30 points
Grade 4	20 replacements/2.5 minutes (Maze)	40 digits	30 points
Grade 5	25 replacements/2.5 minutes (Maze)	30 digits	15 points
Grade 6	30 replacements/2.5 minutes (Maze)	35 digits	15 points

Exhibit 9 shows a sample graph for a third-grade student working on CBM Computation. The end-of-year benchmark of 30 digits is marked with an X and a goal line is drawn between the first few data points and the X. Handout 1 provides an opportunity to practice end-of-year benchmarking.

Exhibit 9. Sample Graph with End-of-Year Benchmark



Option 2: Rate of Improvement. The second option for setting goals is using national norms of improvement. For typically developing students at the grade level where the student is being monitored, identify the average rate of weekly increase from a national norm chart (Exhibit 10).

Exhibit 10. CBM Reading and Math Norms for Student Growth (Slope)

Grade	Reading—Slope	Computation CBM—Slope for Digits Correct	Concepts and Applications CBM—Slope for Points
Kindergarten	No data available	—	—
Grade 1	1.8 (WIF)	0.35	No data available
Grade 2	1.5 (PRF)	0.30	0.40
Grade 3	1.0 (PRF)	0.30	0.60
Grade 4	0.40 (Maze)	0.70	0.70
Grade 5	0.40 (Maze)	0.70	0.70
Grade 6	0.40 (Maze)	0.40	0.70

For example, a fourth-grade student’s average score from his first three CBM Computation probes is 14. The norm for fourth-grade students is 0.70. To set an ambitious goal for the student, multiply the weekly rate of growth by the number of weeks left until the end of the year. If there are 16 weeks left, then multiply 16 by 0.70: $16 \times 0.70 = 11.2$. Add 11.2 to the baseline average of 14 ($11.2 + 14 = 25.2$). This sum (25.2) is the end-of-year performance goal. On the student’s graph, 25.2 would be plotted and a goal line would be drawn. Handout 2 provides an opportunity to practice setting goals based on national norms.

$$\text{Rate of Growth (National or Local Norm)} \times \text{Number of Weeks of Instruction} + \text{Student's Baseline Score} = \text{Student's Goal}$$

Option 3: Intra-Individual Framework. The third option for setting goals is by an intra-individual framework. To use this option, identify the weekly rate of improvement (slope) for the target student under baseline conditions, using at least eight CBM data points. Multiply this slope by 1.5. Take this product and multiply it by the number of weeks until the end of the year. Add this product to the student's baseline score. This sum is the end-of-year goal.

For example, a student's first eight CBM scores were 3, 2, 5, 6, 5, 5, 7, and 4. To calculate the weekly rate of improvement (slope), find the difference between third median point and first median point. In this instance, that's approximately $6 - 3 = 3$. Since eight scores have been collected, divide the difference by the number of data points minus 1. So, $(6 - 3) \div 7 = 0.43$.

Then, 0.43 is multiplied by 1.5: $0.43 \times 1.5 = 0.645$. Multiply the product of 0.645 by the number of weeks until the end of the year. If there are 14 weeks left until the end of the year: $0.645 \times 14 = 9.03$. The average score of the first eight data points was 4.625. The sum of 9.03 and the average score is the end-of-year performance goal: $9.03 + 4.625 = 13.66$. The student's end-of-year performance goal would be 13.66. On the student's graph, 13.66 would be plotted and a goal line would be drawn. Handout 3 provides an opportunity to practice setting goals through the intra-individual framework.

Regardless of the method, clear and ambitious goals need to be established, and effective individualized programs need to be designed and implemented to help students meet those goals.

Frequency of Progress Monitoring

Progress monitoring can be used anytime throughout the school year. Monitoring should occur at regular intervals, but the frequency of the interval can vary (e.g., weekly, bi-weekly, or monthly). At a minimum, progress monitoring tools should be administered monthly. While the recommended number of data points needed to make a decision varies slightly, with Shinn and Good (1989) suggesting the need for at least seven to 10 data points and Christ and Silbergliitt (2007) recommending between six and nine data points, as the number of data points increases, the effects of measurement error on the trend line decreases. While it may be ideal to monitor students more frequently, the sensitivity of the selected progress monitoring tool may dictate the frequency with which the tool can be administered. Some tools are sensitive enough to be used weekly or more frequently, while others are only sensitive enough to be used once or twice a month.

Instructional Decision Making

Once goals are set and supplemental programs are implemented, it is important to monitor student progress. CBM can judge the adequacy of student progress and the need to change instructional programs. Standard decision rules guide decisions about the adequacy of student progress and the need to revise goals and instructional programs. Two common approaches include analyzing the four most recent data points and trend lines.

Decision rules based on the most recent four consecutive scores:

- If the most recent four consecutive CBM scores are above the goal line, the student's end-of-year performance goal needs to be increased.
- If the most recent four consecutive CBM scores are below the goal line, the teacher needs to revise the instructional program.

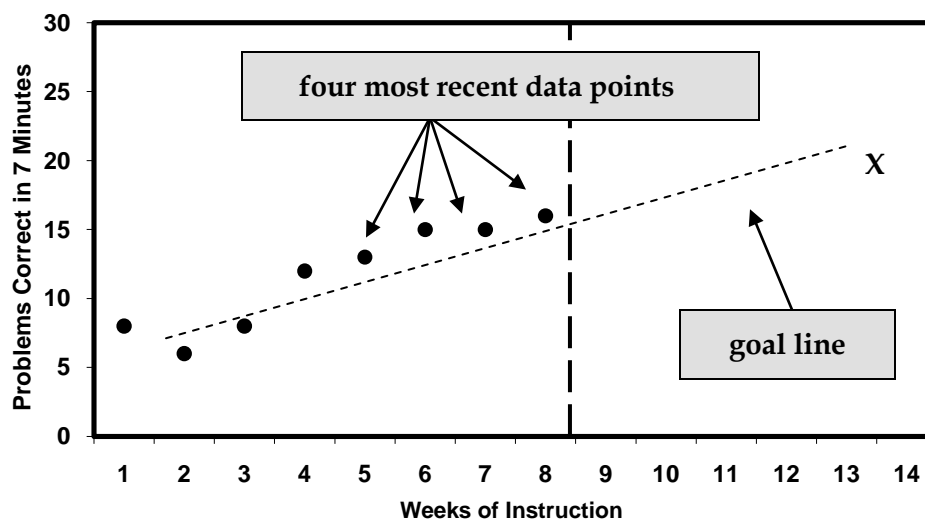
Decision rules based on the trend line:

- If the student's trend line is steeper than the goal line, the student's end-of-year performance goal needs to be increased.
- If the student's trend line is flatter than the goal line, the teacher needs to revise the instructional program.
- If the student's trend line and goal line are the same, no changes need to be made.

Consecutive Data Point Analysis

In Exhibit 11, the most recent four scores are above the goal line. Therefore, the student's end-of-year performance goal needs to be adjusted. The teacher increases the desired rate (or goal) to boost the actual rate of student progress.

Exhibit 11. Four Consecutive Scores Above Goal Line



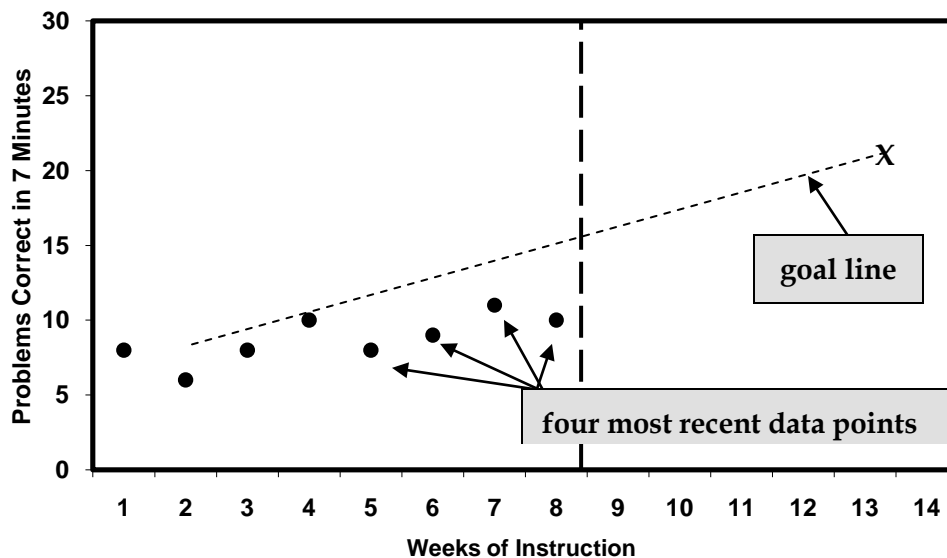
The point of the goal increase is notated on the graph as a dotted vertical line. This allows teachers to visually note when the student's goal was changed. The teacher reevaluates the student's graph in another seven to eight data points.

In Exhibit 12, the most recent four scores are below the goal line. Therefore, the teacher needs to change the student's instructional program. The end-of-year performance goal and goal line

never decrease; they can only increase. The instructional program should be tailored to bring a student's scores up so they match or surpass the goal line.

The teacher draws a dotted vertical line when making an instructional change. This allows teachers to visually note when changes to the student's instructional program were made. The teacher reevaluates the student's graph in another seven to eight data points to determine whether the change was effective.

Exhibit 12. Four Consecutive Scores Below Goal Line

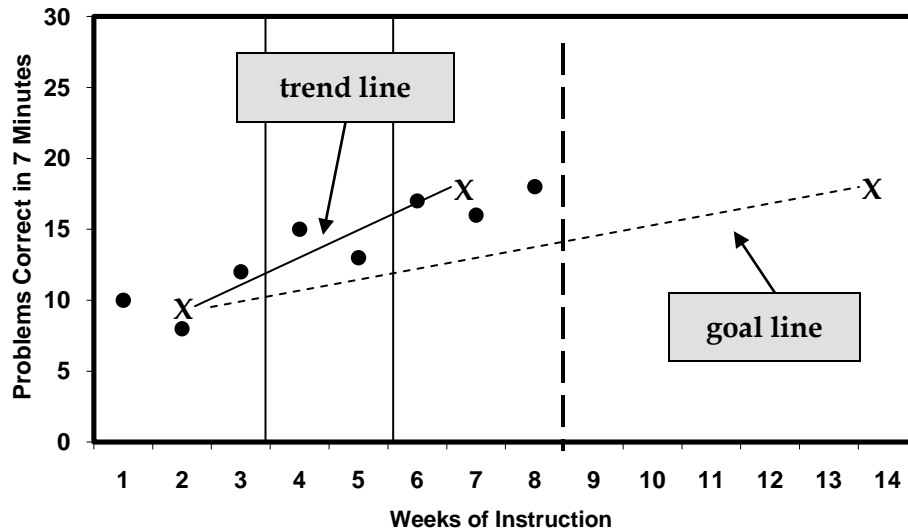


Trend Line Analysis

In Exhibit 13, the trend line is steeper than the goal line. Therefore, the student's end-of-year performance goal needs to be adjusted. The teacher increases the desired rate (or goal) to boost the actual rate of student progress. The new goal line can be an extension of the trend line.

The point of the goal increase is notated on the graph as a dotted vertical line. This allows teachers to visually note when the student's goal was changed. The teacher reevaluates the student's graph in another seven to eight data points.

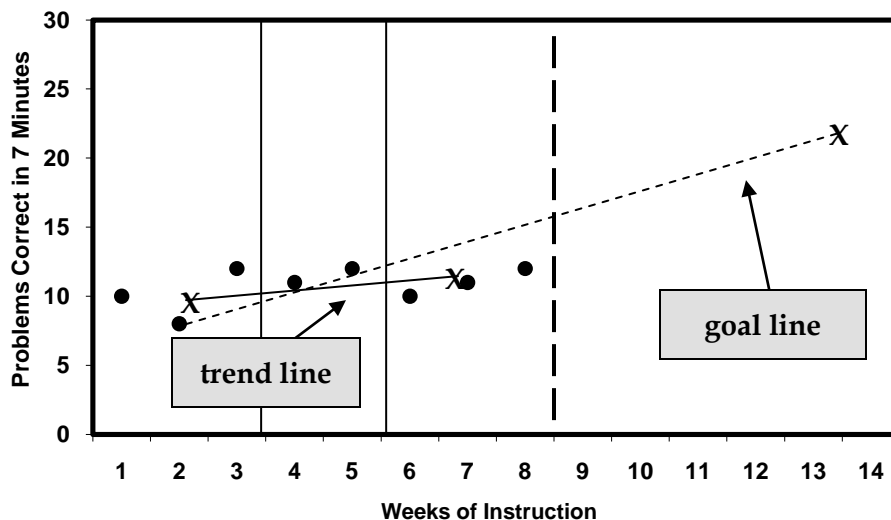
Exhibit 13. Trend Line Above Goal Line



In Exhibit 14, the trend line is flatter than the performance goal line. The teacher needs to change the student's instructional program. Again, the end-of-year performance goal and goal line are **never decreased**. A trend line below the goal line indicates that student progress is inadequate to reach the end-of-year performance goal. The instructional program should be tailored to bring a student's scores up.

The point of the instructional change is represented on the graph as a dotted vertical line. This allows teachers to visually note when the student's instructional program was changed. The teacher reevaluates the student's graph in another seven to eight data points.

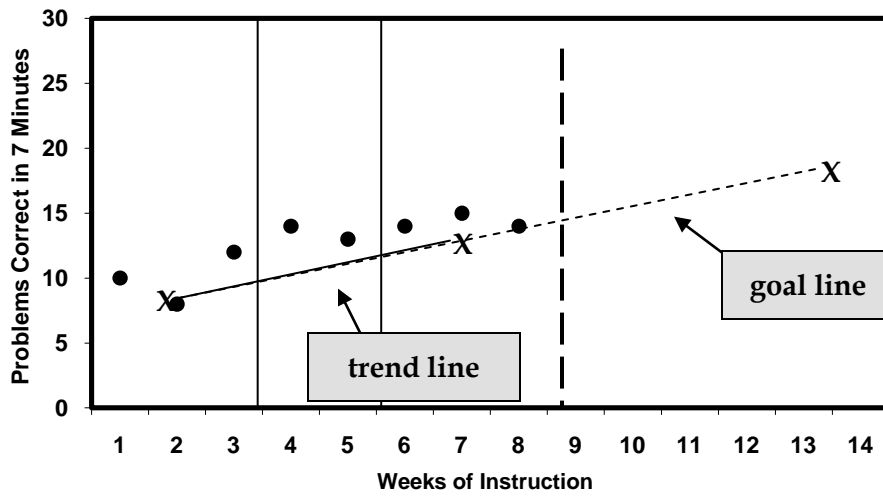
Exhibit 14. Trend Line Below Goal Line



In Exhibit 15, the trend line matches the goal line, so no change is currently needed for the student.

The teacher reevaluates the student's graph in another seven to eight data points to determine whether an end-of-year performance goal or instructional change needs to take place.

Exhibit 15. Trend Line Matches Goal Line



Frequently Asked Questions

What is at the heart of RTI?

The purpose of RTI is to provide all students with the best opportunities to succeed in school, identify students with learning or behavioral problems, and ensure that they receive appropriate instruction and related supports. The goals of RTI are as follows:

- Integrate all the resources to minimize risk for the long-term negative consequences associated with poor learning or behavioral outcomes
- Strengthen the process of appropriate disability identification

What impact does RTI have on students who are not struggling?

An important component of an effective RTI framework is the quality of the primary prevention level (i.e., the core curriculum), where all students receive high-quality instruction that is culturally and linguistically responsive and aligned with a state's achievement standards. This allows teachers and parents to be confident that a student's need for more intensive intervention or referral for special education evaluation is not due to ineffective classroom instruction. In a well-designed RTI system, primary prevention should be effective and sufficient for about 80% of the student population.

Will the RTI process delay identification?

The RTI process takes longer than a traditional one-step comprehensive evaluation. However, beginning at the secondary level of prevention, students are receiving services designed to remediate their learning problems. The hope is that the prevention built into RTI will reduce false-positive identification (i.e., students incorrectly identified as having a disability because they have not received strong instruction) and help many students get on a trajectory toward successful academic outcomes. Also, RTI facilitates prevention and identification early in the primary grades (in contrast to the traditional IQ-achievement discrepancy, which often requires years of schooling before a sizeable discrepancy can accrue).

Should we use progress monitoring with all students?

Since screening tools tend to overidentify student as at risk for poor learning outcomes, progress monitoring is used to verify the results of screening. This could include students that are just above or just below the cut-off score. Once nonresponders are identified through the screening process and verified through progress monitoring, the focus shifts to those students identified as at risk for poor learning outcomes. While most progress monitoring focuses on students in secondary or tertiary interventions, it might be necessary to monitor some students participating in core instruction

How do I know if kids are benefiting/responding to the interventions?

Progress monitoring is used to assess students' performance over time, to quantify student rates of improvement or responsiveness to instruction, to evaluate instructional effectiveness, and, for students who are least responsive to effective instruction, to formulate effective individualized programs. Progress monitoring data are used to determine when a student has or has not responded to instruction at any level of the prevention system. There are several approaches to interpreting data. Some sites follow the Four Point Rule, in which educators

make decisions regarding interventions based on the most recent four student assessment scores, or data points. Other sites make intervention decisions based on trend lines of student assessments.

Can students move back and forth between levels of the prevention system?

Yes, students should move back and forth across the levels of the prevention system based on their success (response) or difficulty (minimal response) at the level where they are receiving intervention, i.e., according to their documented progress based on the data. Also, students can receive intervention in one academic area at the secondary or tertiary level of the prevention system while receiving instruction in another academic area in primary prevention.

Can the same tool be used for screening and progress monitoring?

Some tools can be used for both screening and progress monitoring. On the Center's Screening Tools Chart and Progress Monitoring Tools Chart you can see that some tools appear on both charts. In these cases, they have been evaluated under both sets of standards. Since the goals of screening and progress monitoring are different, it is important to look at the ratings that a tool has received in both charts in order to see if it fits your needs. If a tool is only listed on one chart, you can contact the vendor to find out more information on their approach and the tool's evidence base for both forms of assessment.

What is the difference between progress monitoring assessments and state assessments?

Standardized tests of achievement, or high-stakes tests, are summative assessments typically given once a year and provide an indication of student performance relative to peers at the state or national level. These tests are assessments of learning and measures of what students have learned over a period of time. The assessments are typically used for accountability, resource allocation, and measures of skill mastery. They are often time-consuming and are not valid for individual student decision making. Conversely, progress monitoring assessments are formative assessments that occur during instruction and are brief, efficient measures of students' performance on an ongoing basis. With formative assessment, student progress is systematically assessed to provide continuous feedback to both the student and the teacher concerning learning successes and failures. These assessments are used to inform instruction and can be used to identify students who are not responsive to instruction or interventions (screening), to understand rates of student improvement (progress monitoring), to make curriculum and instructional decisions, to evaluate program effectiveness, to proactively allocate resources, and to compare the efficacy of instruction and interventions.

How frequently should I use progress monitoring?

Progress monitoring can be used anytime throughout the school year. Monitoring should occur at regular intervals, but the frequency of the interval can vary (e.g., weekly, bi-weekly, or monthly). At a minimum, progress monitoring tools should be administered monthly. While the recommended number of data points needed to make a decision varies slightly by researcher, with Shinn and Good (1989) suggesting the need for at least seven to 10 data points and Christ and Silbergliitt (2007) recommending between six and nine data points, as the number of data points increases, the effects of measurement error on the trend line decreases. While it may be ideal to monitor students frequently, the sensitivity of the tool that is selected

may dictate the frequency with which the tool can be administered. Some tools are more sensitive than others, so they can be used more frequently. The Progress Monitoring Tools Chart provides information on each tool.

Are there other names for progress monitoring?

Progress monitoring is a relatively new term. Other terms you may be more familiar with are Curriculum-Based Measurement and Curriculum-Based Assessment. Whatever method you decide to use, it is most important that you ensure it is a scientifically based practice that is supported by significant research.

How do you set an appropriate goal for a student?

The practice of goal setting should be a logical process where it is clear **why** and **how** the goal was set, **how long** there is to attain the goal, and what the student is **expected to do** when the goal is met. Goals can be set using a number of different practices. These include benchmarks or target scores, rates of improvement based on national norms, and rates of improvement based on individual or local norms. For more information on goal setting, see the Iris Center Module: Classroom Assessment (Part 2): Evaluating Reading Progress at <http://iris.peabody.vanderbilt.edu/rpm/chalcycle.htm>. See the section on “Perspectives and Resources” for specific guidance around goal setting.

What is CBM?

CBM is an approach to measurement that is used to screen students or to monitor student progress in mathematics, reading, writing, and spelling. With CBM, teachers and schools can assess individual responsiveness to instruction. When a student proves unresponsive to the instructional program, CBM signals the teacher/school to revise that program. Each CBM test is an alternate form of equivalent difficulty. Each test samples the year-long curriculum in exactly the same way using prescriptive methods for constructing the tests. In fact, CBM is usually conducted with “generic” tests, designed to mirror popular curricula. CBM is highly prescriptive and standardized, which increases the reliability and validity of scores. CBM provides teachers with a standardized set of materials that has been researched to produce meaningful and accurate information. CBM makes no assumptions about instructional hierarchy for determining measurement. In other words, CBM fits with any instructional approach. Also, CBM incorporates automatic tests of retention and generalization. Therefore, the teacher is constantly able to assess whether the student is retaining what was taught earlier in the year.

On the Progress Monitoring Tools Chart there are both General Outcome Measures and Mastery Measures listed – what is the difference?

Mastery measures and General Outcome Measures (GOMs) are both forms of formative assessments. Mastery measures determine the mastery of a series of short-term instructional objectives. For example, a student may master multi-digit addition and then master multi-digit subtraction. To use mastery measures, teachers must determine a sensible instructional sequence and design criterion-referenced testing procedures to match each step in that instructional sequence. Teacher-made tests present concerns given the unknown reliability and validity of these measures. The hierarchy of skills used in mastery measurement is logical, not empirical. This means that while it may seem logical to teach addition first and then subtraction,

there is no evidence base for the sequence. Because mastery measures are based on mastering one skill before moving on to the next skill, the assessment does not reflect maintenance or generalization. It becomes impossible to know if, after teaching one skill, the student still remembers how to perform the previously learned skill. In addition, how a student does on a mastery measure assessment does not indicate how he or she will do on standardized tests because the number of objectives mastered does not relate well to performance on criterion measures. General outcome measures (GOMs) do not have the limitations of mastery measures. They are indicators of general skill success and reflect overall competence in the annual curriculum. They describe students' growth and development over time or both their "current status" and their "rate of development." Common characteristics of GOMs are that they are simple and efficient, are sensitive to improvement, provide performance data to guide and inform a variety of educational decisions, and provide national/local norms to allow for cross comparisons of data.

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Appendix A: NCRTI Progress Monitoring Glossary of Terms

Alternate Forms

Alternate forms are parallel versions of the measure within a grade level, of comparable difficulty (or, with Item Response Theory-based item, of comparable ability invariance).

Benchmark

A benchmark is an established level of performance on a test. A benchmark can be used for screening if it predicts important outcomes in the future. Alternatively, a benchmark can be used as a cut-score that designates proficiency or mastery of skills.

Coefficient Alpha

Coefficient alpha is a measure of the internal consistency of items within a measure. Values of alpha coefficients can range from 0 to 1.0. Alpha coefficients that are closer to 1.0 indicate items are more likely to be measuring the same thing.

Criterion Validity

Criterion validity indexes how well one measure correlates with another measure purported to represent a similar underlying construct. It can be concurrent or predictive.

Content Validity

Content validity relies on expert judgment to assess how well items measure the universe they are intended to measure.

Criterion Measure

A criterion measure is the measure against which criterion validity is judged.

Cross-Validation

Cross-validation is the process of validating the results of one study by performing the same analysis with another sample under similar conditions.

Direct Evidence

Direct evidence is a term used on the Center's tools charts to refer to data from a study based on the tool submitted for evaluation.

Disaggregated Data

Disaggregated data is a term used on the Center's tools charts to indicate that a tool reports information separately for specific sub-populations (e.g., race, economic status, or special education status).

End-of-Year Benchmarks

End-of-year benchmarks specify the level of performance expected at the end of the grade, by grade level.

General Outcome Measure (GOM)

A GOM is a measure that reflects overall competence in the annual curriculum.

Generalizability

Generalizability is the extent to which results generated on a sample are pertinent to a larger population. A tool is considered more generalizable if studies have been conducted on large representative samples.

Growth

Growth refers to the slope of improvement or the average weekly increase in scores by grade level.

Indirect Evidence

Indirect evidence is a term used on the Center's tools charts to refer to data from studies conducted using other tools that have similar test construction principles.

Inter-Scorer Agreement

Inter-scorer agreement is the extent to which raters judge items in the same way.

Kappa

Kappa is an index that compares the agreement against what might be expected by chance. Kappa can be thought of as the chance-corrected proportional agreement. Possible values range from +1 (perfect agreement) via 0 (no agreement above that expected by chance) to -1 (complete disagreement).

Mastery Measurement (MM)

MM indexes a student's successive mastery of a hierarchy of objectives.

Norms

Norms are standards of test performance derived by administering the test to a large representative sample of students. Individual student results are compared to the established norms.

Pass/Fail Decisions

Pass/fail decisions are the metric in which mastery measurement scores are reported.

Performance Level Score

Performance level score is the score (often the average, or median, of two or three scores); it indicates the student's level of performance.

Predictive Criterion Validity

Predictive validity indexes how well a measure predicts future performance on a highly valued outcome.

Progress Monitoring

Progress monitoring is repeated measurement of academic performance used to inform instruction of individual students in general and special education in Grades K-8. It is conducted at least monthly to (a) estimate rates of improvement, (b) identify students who are not demonstrating adequate progress and/or (c) compare the efficacy of different forms of instruction to design more effective, individualized instruction.

Rate of Improvement

Rates of improvement specify the slopes of improvement or average weekly increases, based on a line of best fit through the student's scores.

Reliability

Reliability is the extent to which scores are accurate and consistent.

Response to Intervention (RTI)

RTI integrates assessment and intervention within a multi-level prevention system to maximize student achievement and to reduce behavior problems. With RTI, schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending on a student's responsiveness, and identify students with learning disabilities.

Sensitivity

Sensitivity is the extent to which a measure reveals improvement over time, when improvement actually occurs.

Skill Sequence

The skills sequence is the series of objectives that correspond to the instructional hierarchy through which mastery is assessed.

Specificity

Specificity is the extent to which a screening measure accurately identifies students not at risk for the outcome of interest.

Split-Half Reliability

Split-half reliability indexes a test's internal reliability by correlating scores from one half of items with scores on the other half of items.

Standard Error of the Mean (SEM)

The standard error of the mean (SEM) is the standard deviation of the sample mean estimate of a population mean.

Technical Adequacy

Technical adequacy implies that psychometric properties such as validity and reliability meet strong standards.

Test-Retest Reliability

Test-retest reliability is the consistency with which an assessment tool indexes student performance from one administration to the next.

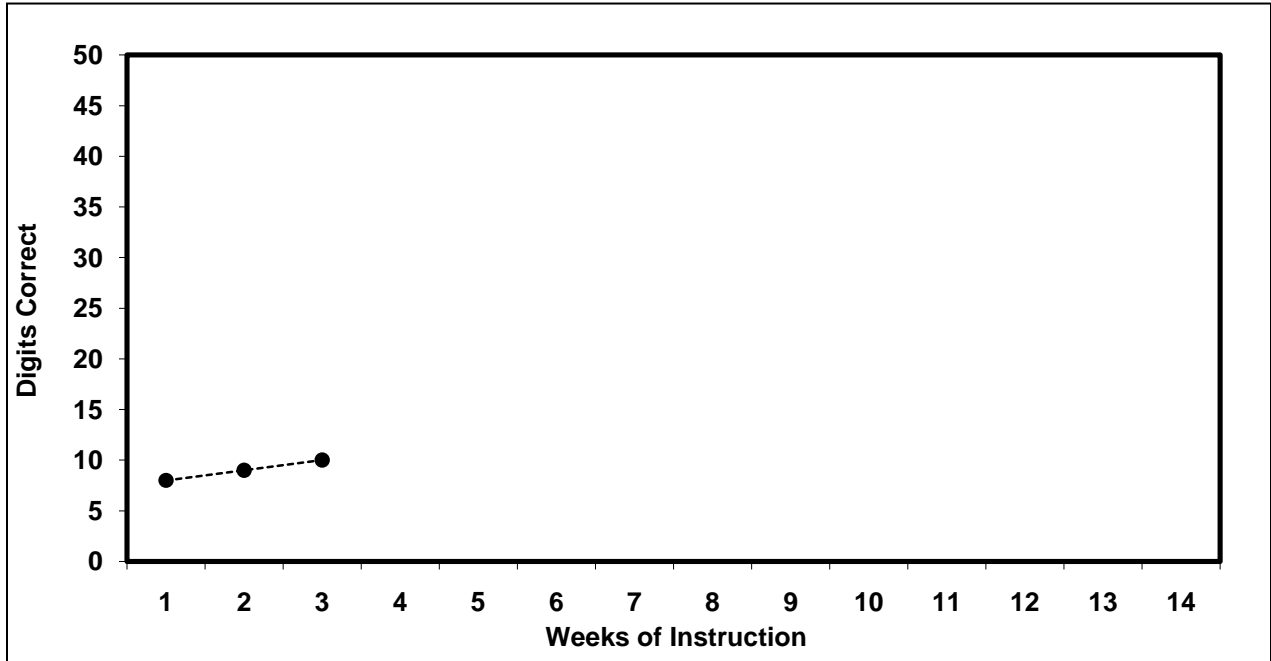
Validity

Validity is the extent to which scores represent the underlying construct.

Appendix B: Handouts

Handout 1: Setting Goals—End-of-Year Benchmarking (Gunnar)

This is Gunnar’s CBM Computation graph. He is a fourth-grade student. Use end-of-year benchmarks to calculate Gunnar’s end-of-year goal.



Follow these steps to determine end-of-year benchmarks:

1. Identify appropriate grade-level benchmark
2. Mark benchmark on student graph with an X
3. Draw goal line from first three CBM scores to X

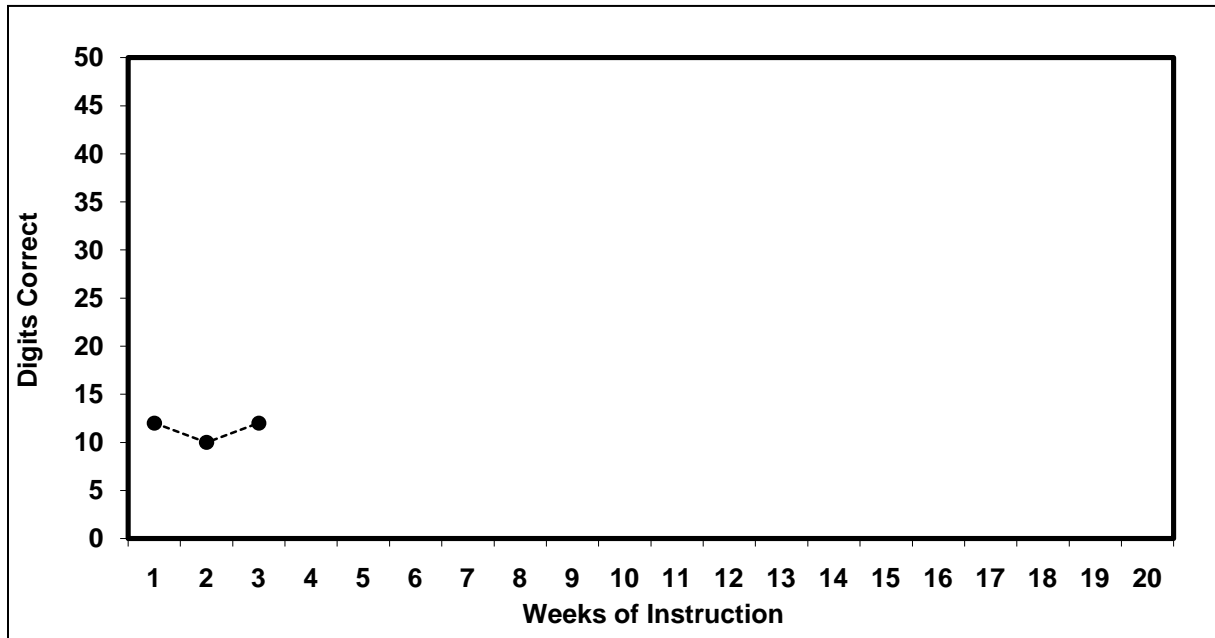
This chart provides the end-of-year benchmarks:

Grade	Reading	Computation	Concepts and Applications
Kindergarten	40 sounds/minute (LSF)	—	—
Grade 1	60 words/minute (WIF)	20 digits	20 points
Grade 2	75 words/minute (PRF)	20 digits	20 points
Grade 3	100 words/minute (PRF)	30 digits	30 points
Grade 4	20 replacements/2.5 minutes (Maze)	40 digits	30 points
Grade 5	25 replacements/2.5 minutes (Maze)	30 digits	15 points
Grade 6	30 replacements/2.5 minutes (Maze)	35 digits	15 points

Note: These figures may change pending additional RTI research.

Handout 2: Setting Goals—National Norms (Jane)

This is Jane’s graph. Jane is a second-grade student. Her progress for CBM Computation is shown in the graph below. Use national norms to calculate Jane’s goal at the end of the year.



Follow these steps for using national norms for weekly rate of improvement:

1. Calculate the average of the student’s first three scores (baseline)
2. Find the appropriate norm from the table
3. Multiply norm by the number of weeks left in the year
4. Add to baseline
5. Mark goal on student graph with an X
6. Draw a goal line from baseline

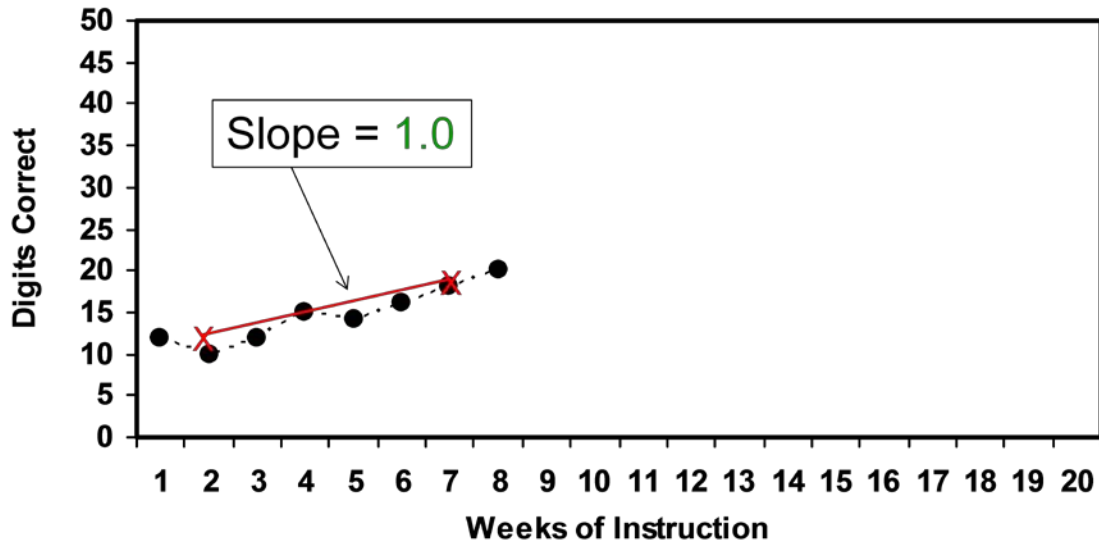
This chart provides the national norms for weekly rate of improvement (slope):

Grade	Reading—Slope	Computation CBM—Slope for Digits Correct	Concepts and Applications CBM—Slope for Points
Kindergarten	No data available	—	—
Grade 1	1.8 (WIF)	0.35	No data available
Grade 2	1.5 (PRF)	0.30	0.40
Grade 3	1.0 (PRF)	0.30	0.60
Grade 4	.40 (Maze)	0.70	0.70
Grade 5	.40 (Maze)	0.70	0.70
Grade 6	.40 (Maze)	0.40	0.70

Note: These figures may change pending additional RTI research.

Handout 3: Setting Goals—Intra-Individual Framework (Cecelia)

This is Cecelia's graph. Use the intra-individual framework to calculate Cecelia's end-of-year goal. Steps for calculating the goal can be found below the graph.

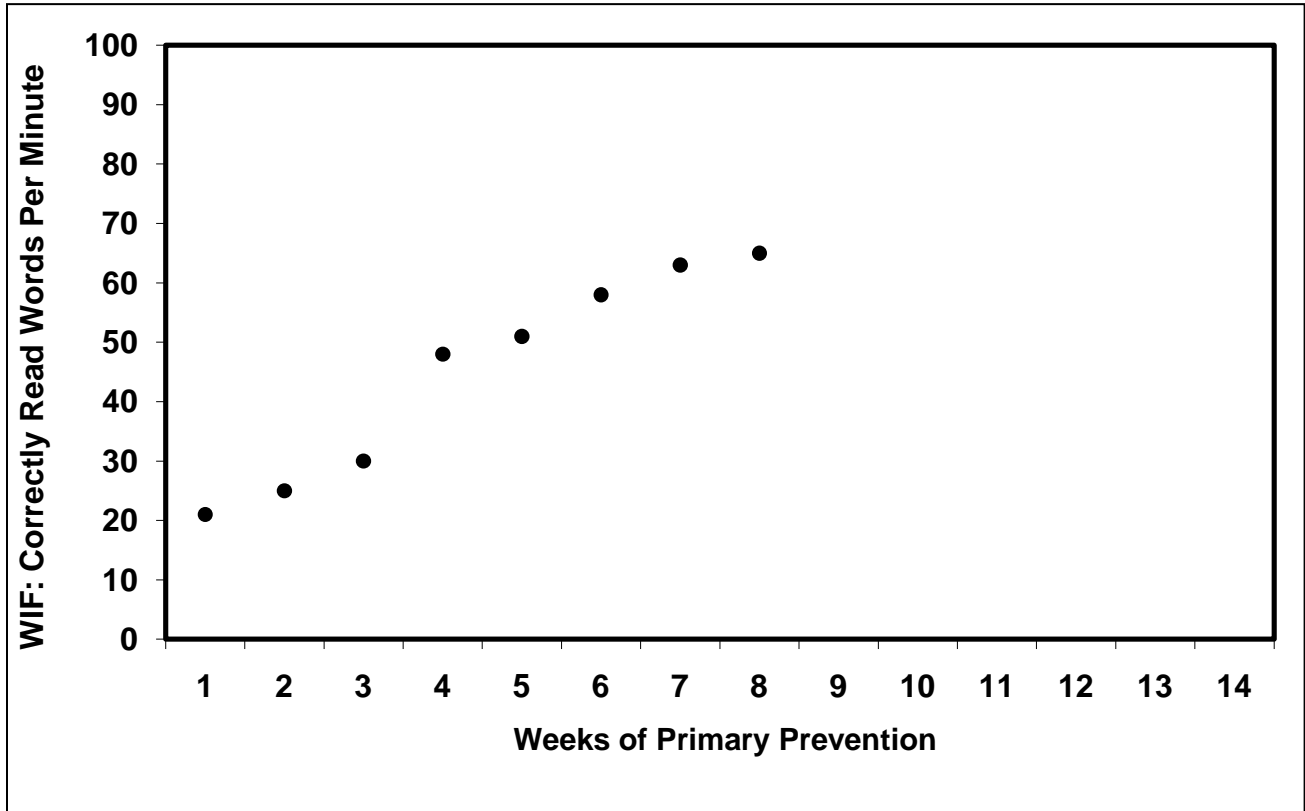


Follow these steps for the intra-individual framework:

1. Identify weekly rate of improvement (slope) using at least eight data points.
2. Multiply slope by 1.5.
3. Multiply (slope \times 1.5) by number of weeks until the end of the year.
4. Add to student's baseline score. The baseline score is the average of the first eight data points.
5. Mark goal on student graph with an X.
6. Draw a goal line from baseline to X.

Handout 4: Practicing the Tukey Method

Below is a graph of a student's progress across nine weeks of primary prevention. Use the Tukey Method to draw the trend line for these data points. The steps can be found below the graph.



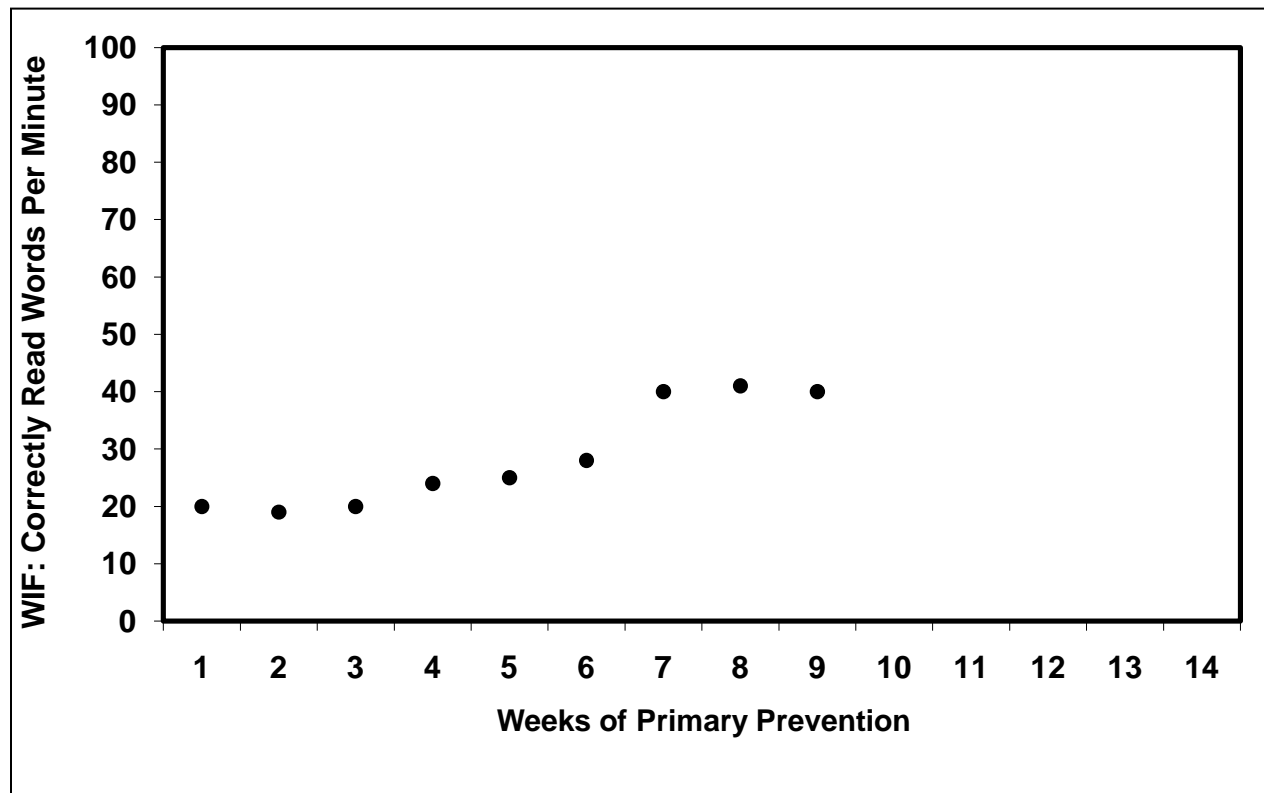
Step 1: Divide the data points into three equal sections by drawing two vertical lines. (If the points divide unevenly, then group them approximately.)

Step 2: In the first and third sections, find the median data point and median instructional week. Locate the place on the graph where the two values intersect and mark that spot with an X.

Step 3: Draw a line through the two Xs and extend the line to the margins of the graph. This represents the trend line or line of improvement.

Handout 5: Practicing the Tukey Method and Calculating Slope

Below is a graph of a student's progress across nine weeks of primary prevention. Use the Tukey Method to draw the trend line and calculate the slope.



Step 1: Divide the data points into three equal sections by drawing two vertical lines. (If the points divide unevenly, then group them approximately.)

Step 2: In the first and third sections, find the median data point and median instructional week. Locate the place on the graph where the two values intersect and mark that spot with an X.

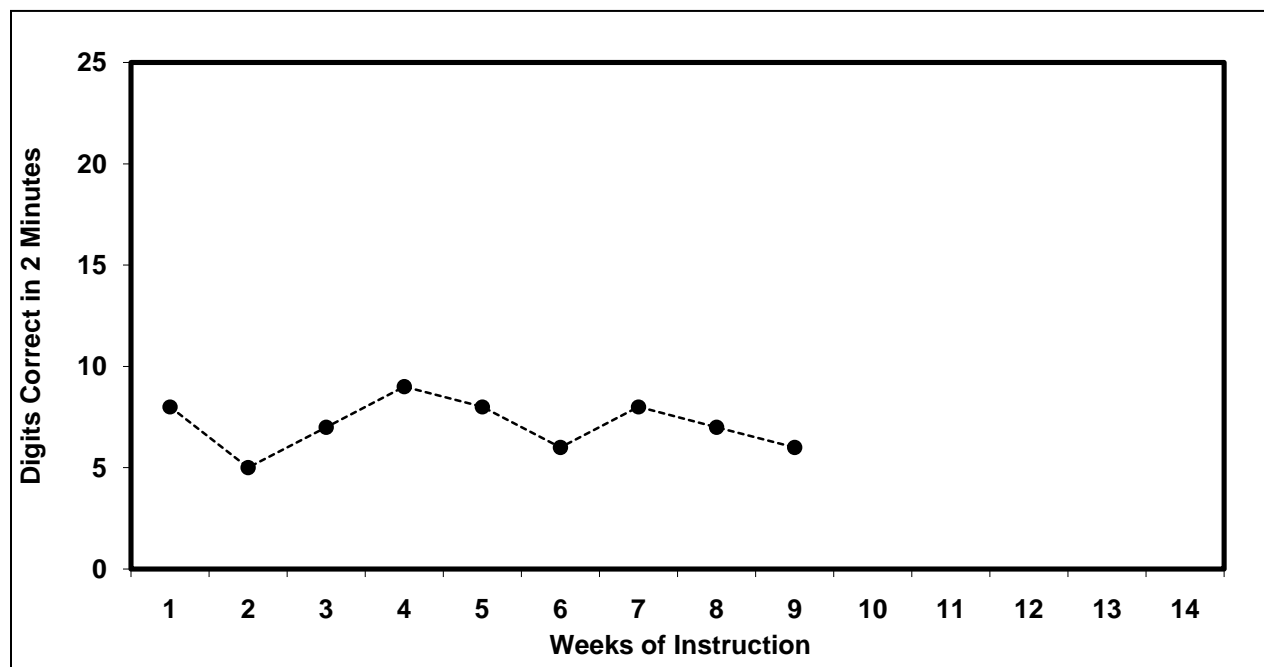
Step 3: Draw a line through the two Xs and extend that line to the margins of the graph. This represents the trend line or line of improvement.

Calculating Slope

$$\frac{\text{third median point} - \text{first median point}}{\text{number of data points} - 1}$$

Handout 6: Calculating Slope and Determining Responsiveness in Primary Prevention (Arthur)

This is Arthur's CBM Computation graph. He is a second-grade student. Calculate Arthur's slope and use the chart below to determine his responsiveness to primary prevention.



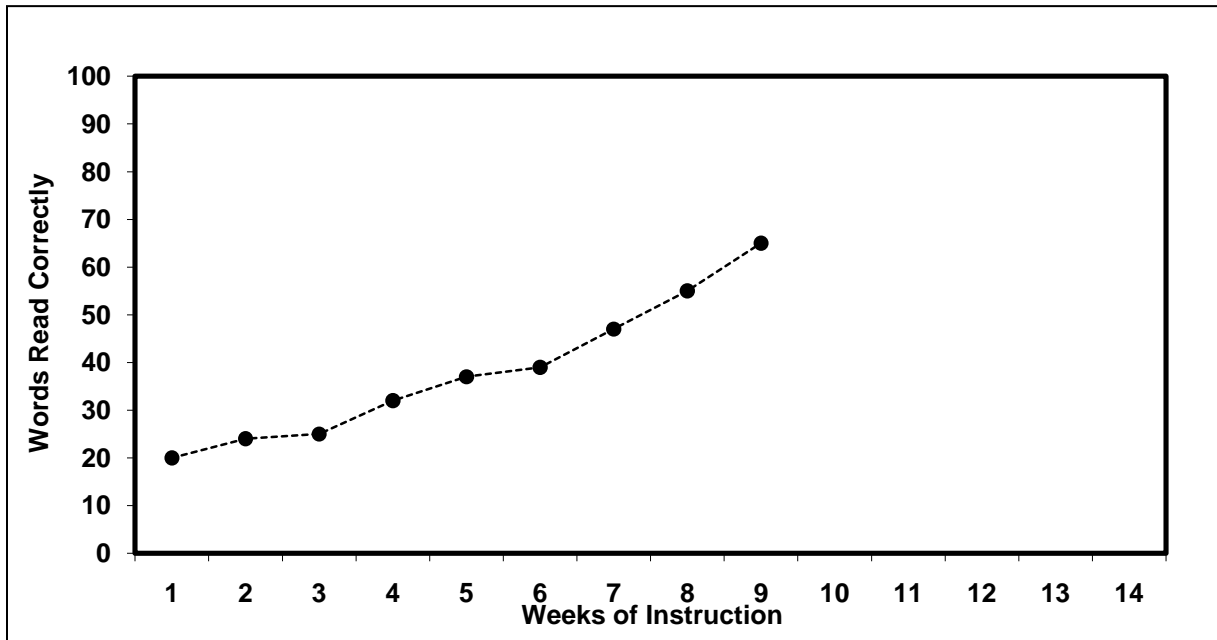
This chart provides the slope cut-offs for students in primary prevention. Students above the cut-off are responsive to primary prevention. Students below the cut-off are unresponsive to primary prevention. What about Arthur?

Grade	Inadequate Reading Slope	Inadequate Math Computation Slope	Inadequate Math Concepts and Applications Slope
Kindergarten	< 1 (LSF)	< 0.20	< 0.20
Grade 1	< 1.8 (WIF)	< 0.25	< 0.30
Grade 2	< 1 (PRF)	< 0.20	< 0.30
Grade 3	< 0.75 (PRF)	< 0.20	< 0.50
Grade 4	< 0.25(Maze)	< 0.50	< 0.50
Grade 5	< 0.25 (Maze)	< 0.50	< 0.50
Grade 6	< 0.25 (Maze)	< 0.50	< 0.50

Note: These figures may change pending additional RTI research.

Handout 7: Calculating Slope and Determining Responsiveness in Secondary Prevention (David)

This is David's CBM Passage Reading Fluency graph. He is a third-grade student. Calculate his slope and use the chart below to determine David's responsiveness to secondary prevention.



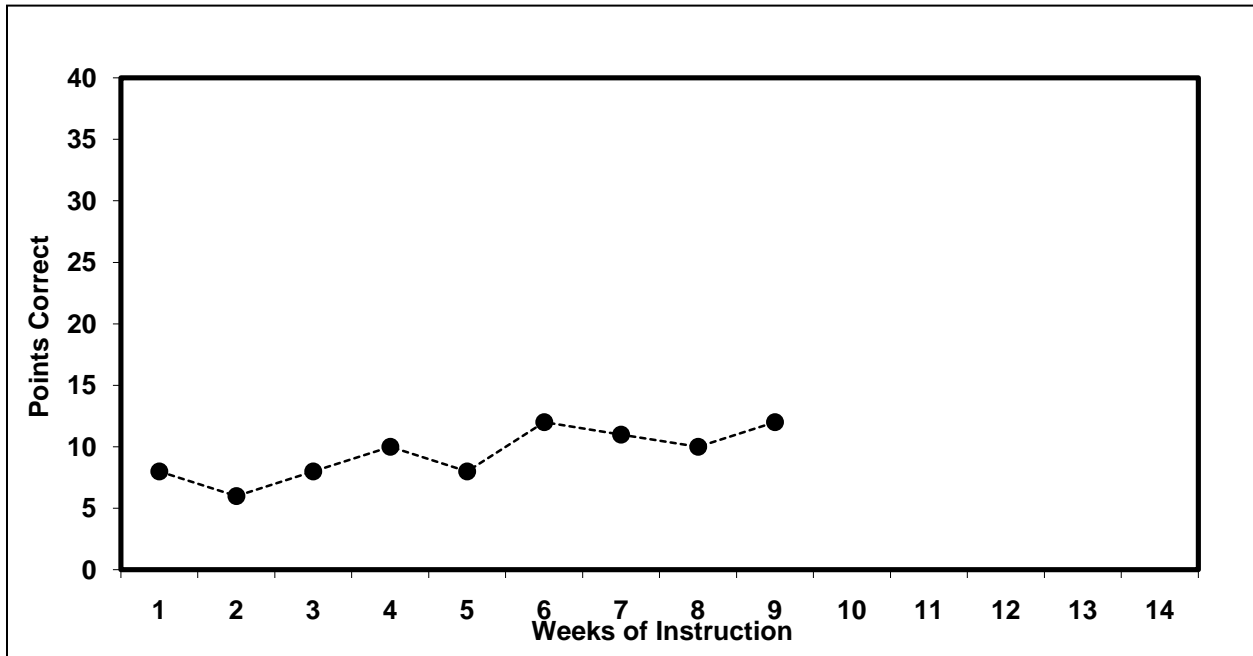
This chart provides the slope and end level cut-offs for students in secondary prevention. Students above the cut-off are responsive to secondary prevention. Students below the cut-off are unresponsive to secondary prevention. What about David?

Grade	CBM Probe	< Slope	< End Level
Kindergarten	Letter Sound Fluency	< 1	< 30
Grade 1	Word Identification Fluency	< 1.8	< 30
Grade 2	Passage Reading Fluency	< 1	< 60
Grade 3	Passage Reading Fluency	< 0.75	< 70
Grade 4	Maze Fluency	< 0.25	< 25
Grade 5	Maze Fluency	< 0.25	< 25
Grade 6	Maze Fluency	< 0.25	< 25

Note: These figures may change pending additional RTI research.

Handout 8: Calculating Slope and Determining Responsiveness to Secondary Prevention (Martha)

This is Martha's CBM Concepts and Applications graph. She is a third-grade student. Calculate her slope and use the chart below to determine Martha's responsiveness to secondary prevention.



This chart provides the slope and end level cut-offs for students in secondary prevention. Students above the cut-off are responsive to secondary prevention. Students below the cut-off are unresponsive to secondary prevention. What about Martha?

Grade	Computation		Concepts and Applications	
	< Slope	< End Level	< Slope	< End Level
Grade 1	< 0.50	< 20 digits	< 0.40	< 20 points
Grade 2	< 0.40	< 20 digits	< 0.40	< 20 points
Grade 3	< 0.40	< 20 digits	< 0.70	< 20 points
Grade 4	< 0.70	< 20 digits	< 0.70	< 20 points
Grade 5	< 0.70	< 20 digits	< 0.70	< 20 points
Grade 6	< 0.70	< 20 digits	< 0.70	< 20 points

Note: These figures may change pending additional RTI research.

Appendix C: RTI Case Study

Bear Lake School—Nina

Read the first part of this case study to get a background on how RTI is implemented at Bear Lake School. Think about the questions included throughout the narrative. Then consider the example of Nina, a second-grade student.

Bear Lake School

Bear Lake uses the widely researched three-tier RTI model. Nina is second-grade student who is struggling with math in the general education classroom. All the second-grade teachers use a strong research-based math program. Implementation fidelity of the math program is very high. Last year, only 5% of second-grade students failed to achieve end-of-year CBM Computation benchmarks.

Primary Prevention

Bear Lake School uses CBM Computation as its RTI measure. All second-grade students are screened in September. The cut-off for students suspected to be at risk for math failure on CBM Computation is 10.

QUESTION: Look at Exhibit 1. Based on these CBM Computation scores, which students in Mr. Bingham's class are suspected to be at risk for math failure?

Exhibit 1. CBM Computation Scores for Mr. Bingham's Class

Student	CBM Score	Student	CBM Score
Marcie	13	Cheyenne	13
Anthony	12	Marianne	18
Deterrious	15	Kevin	19
Amy	18	Dax	13
Matthew	11	Ethan	6
Calliope	16	Colleen	21
Noah	25	Grace	14
Nina	8	Cyrus	20

ANSWER: Nina and Ethan scored below 10, so they are suspected to be at risk for math failure.

At Bear Lake School, the students suspected to be at risk are monitored for seven weeks to check their response to primary prevention. During the 7 weeks, suspected at-risk students are administered CBM Computation weekly. A CBM Computation slope above 0.20 designates positive response to primary prevention.

QUESTIONS: What happens to students who meet the slope cut-off of 0.20? What happens to students who do not meet the slope cut-off of 0.20?

ANSWERS: At-risk students with CBM slopes greater than 0.20 are responders to primary prevention. These students remain in general education. At-risk students with CBM slopes less than 0.20 are nonresponders to primary prevention. These students move to secondary prevention.

Secondary Prevention

Bear Lake uses a standard tutoring program for secondary prevention. The tutoring instructs students for 16 weeks in a small-group setting. Student groups work with a tutor three times a week for 30 minutes a session. Tutoring sessions focus on number concepts, basic math facts, addition and subtraction of two-digit numbers, word-problem solving, and missing addends.

QUESTIONS: Who administers the tutoring sessions? What type of activities will ensure the tutoring program is implemented correctly?

ANSWERS: Trained paraprofessionals serve as the tutors for the secondary intervention. To make sure the tutoring program is implemented correctly, tutors should meet on a weekly basis to troubleshoot tutoring problems and examine student CBM Computation graphs.

During tutoring, Bear Lake measures at-risk students weekly using alternate forms of CBM Computation. Student scores are graphed, and slopes are calculated at the end of secondary prevention.

QUESTION: Look at Exhibit 2. What cut-off points should Bear Lake use during secondary prevention?

Exhibit 48. Quantifying Response to Secondary Prevention Math

Grade	Computation		Concepts and Applications	
	< Slope	< End Level	< Slope	< End Level
Grade 1	< 0.50	< 20 digits	< 0.40	< 20 problems
Grade 2	< 0.40	< 20 digits	< 0.40	< 20 problems
Grade 3	< 0.40	< 20 digits	< 0.70	< 20 problems
Grade 4	< 0.70	< 20 digits	< 0.70	< 20 problems
Grade 5	< 0.70	< 20 digits	< 0.70	< 20 problems
Grade 6	< 0.70	< 20 digits	< 0.70	< 20 problems

ANSWER: For second-grade students assessed on CBM Computation, Bear Lake could use two different cut-off points: Students who have slope improvement greater than 0.40 or an end-level score of at least 20 are responsive to secondary prevention tutoring. Students who have slope improvement less than 0.40 or an end-level score below 20 are classified as unresponsive to secondary prevention tutoring.

Students who are unresponsive to secondary prevention may need tertiary prevention (due to their lack of growth in response to a research-validated standard treatment to which the vast majority of students can be expected to respond).

Tertiary Prevention

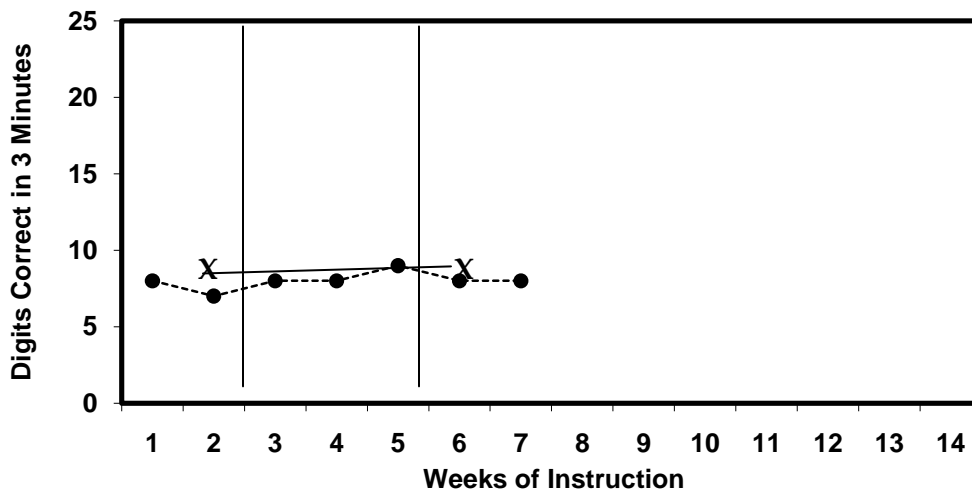
At Bear Lake, special education teachers and intervention specialists use progress monitoring to develop appropriate goals and intensive, individualized instructional programs. Bear Lake's tertiary prevention is a flexible service: it permits exit and reentry as student needs change in relation to the demands of the general education curriculum.

Nina

On the September screening, Nina's average score across two CBM Computation forms was 8.0. As discussed before, this score was below the cut-off for students suspected of being at risk for math failure. Nina's performance was monitored using CBM Computation for seven weeks to gauge response to primary prevention.

QUESTION: Look at the graph in Exhibit 3. What is Nina's CBM slope at the end of seven weeks of primary prevention?

Exhibit 3. Nina's CBM Computation Graph in Primary Prevention



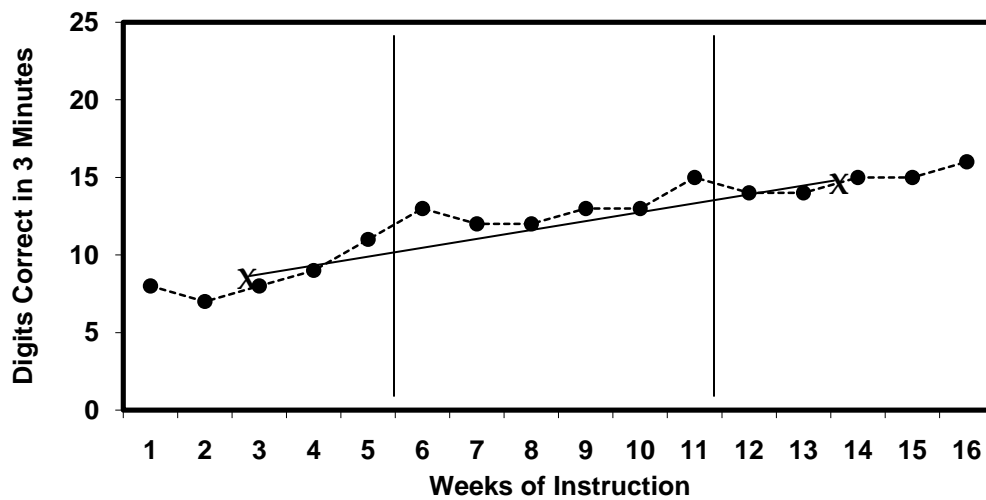
ANSWER: At the end of seven weeks, Nina's CBM Computation slope was $(8 - 8) \div 7 = 0.0$. This fell well below the 0.20 criterion for positive response.

QUESTION: So, what should happen to Nina?

ANSWER: With a slope of less than 0.20, Nina was deemed unresponsive to primary prevention, so she should transition to secondary prevention tutoring.

Secondary prevention was conducted three times a week for 16 weeks. CBM Computation data were collected weekly over the course of tutoring. Exhibit 4 shows Nina's progress over the 16 weeks.

Exhibit 4. Nina's CBM Computation Graph in Secondary Prevention

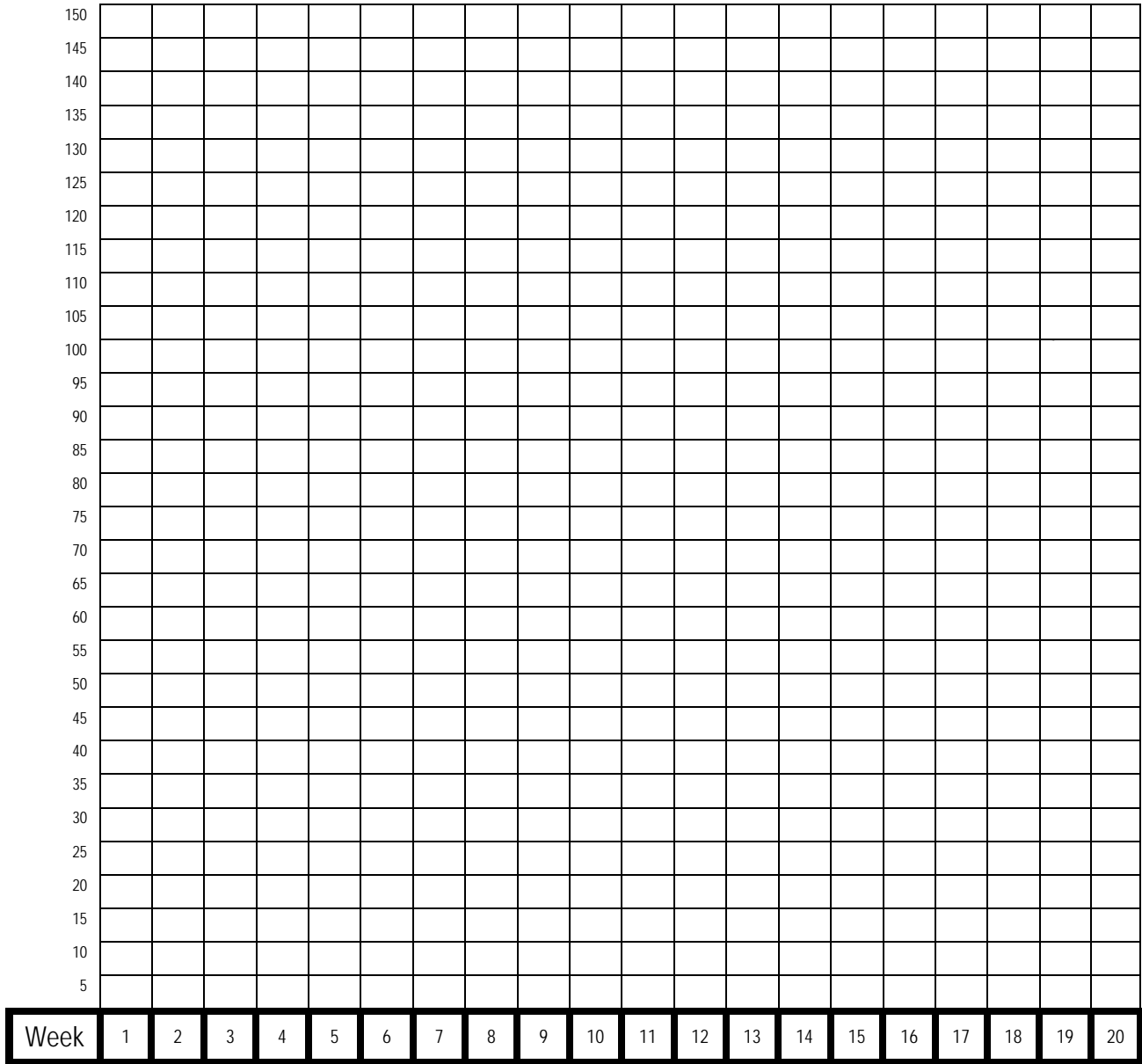


QUESTION: Based on this graph, what is Nina's slope during secondary prevention? What decisions should be made about Nina?

ANSWER: Nina's slope over secondary prevention tutoring was $(14 - 7) \div 15 = 0.46$. This slope exceeded the secondary prevention cut-off of 0.40 for positive response. Nina has been responsive to secondary prevention and would return to primary prevention with weekly progress monitoring to monitor her progress in primary prevention.

Appendix D: Progress Monitoring Graph Template

Name: _____ Goal: _____



Notes/comments:

Appendix E: Websites with Additional Information

National Center on Response to Intervention

The National Center on Response to Intervention's mission is to provide technical assistance to states and districts and build the capacity of states to assist districts in implementing proven models for RTI/EIS. The Center provides online resources to assist states, districts, and schools in implementing response to intervention (RTI).

www.rti4success.org

Doing What Works

Doing What Works (DWW) is a website sponsored by the U.S. Department of Education. DWW provides an online library of resources that may help teachers, schools, districts, states, and technical assistance providers implement research-based instructional practice. Much of the DWW content is based on information from IES' [What Works Clearinghouse](#) (WWC). Doing What Works modules provide summaries of research-based practices, explanations of key concepts, expert interviews, school-based interviews, sample materials, tools, templates, and ideas for moving forward.

<http://dww.ed.gov/>

National High School Center

The National High School Center provides information and resources about many high school improvement topics, including, dropout prevention transitions, early warning systems, and high school literacy. The National High School Center has a variety of products that might be useful when implementing RTI in high schools, for example, a suite of products on early warning systems including an implementation guide and tool as well a brief on tiered interventions in high school. www.betterhighschools.org

RTI Action Network

The RTI Action Network provides resources to guide educators and families in the large-scale implementation of RTI. The RTI Action Network provides a variety of resources for RTI including "virtual visits" to schools implementing RTI, expert interviews, online discussions, forms, checklists, and research briefs. The RTI Action Network is a program of the National Center for Learning Disabilities, funded by the Cisco Foundation.

www.rtinetwork.org/connect/leadership-network

IRIS Center

The IRIS Center for Training Enhancements has free online interactive resources that translate research about the education of students with disabilities into practice. They provide modules, case studies, activities, and more. These modules and videos can be used for professional development. iris.peabody.vanderbilt.edu/

Center on Positive Behavioral Interventions and Supports (PBIS)

The Center on Positive Behavioral Interventions and Supports is an Office of Special Education Programs (OSEP) Technical Assistance Center that provides resources on implementing positive behavior and supports.

www.pbis.org/

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About the National Center on Response to Intervention

Through funding from the U.S. Department of Education's Office of Special Education Programs, the American Institutes for Research and researchers from Vanderbilt University and the University of Kansas have established the National Center on Response to Intervention. The Center provides technical assistance to states and districts and builds the capacity of states to assist districts in implementing proven response to intervention frameworks.



National Center on Response to Intervention
<http://www.rti4success.org>

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